Al-201 – Autolmmune 12AP1/E5 -- Viventia Biotech AI-301 - Autolmmune 1964 -- Aventis AIDS vaccine - ANRS, CIBG, Hesed 20K growth hormone -- AMUR Biomed, Hollis-Eden, Rome, United 28P6/E6 -- Viventia Biotech Biomedical, American i-lome Products, 3-Hydroxyphthaloyl-beta-lactoglobulin -Maxygen 4-IBB ligand gene therapy airway receptor ligand -- IC Innovations 64-Cu MAb conjugate TETA-1A3 --- AJvW 2 -- Ajinomoto Mallinckrodt Institute of Radiology AK 30 NGF -- Alkermes 64-Cu MAb conjugate TETA-cT84.66 Albuferon -- Human Genome Sciences 64-Cu Trastuzumab TETA conjugate albumin - Biogen, DSM Anti-Infectives, Genentech Genzyme Transgenics, PPL Therapeutics, A 200 -- Amgen TranXenoGen, Welfide Corp. A10255 - Eli Liliy aldesleukin -- Chiron A1PDX - Hedral THerapeutics alefacept -- Biogen A6 - Angstrom Alemtuzumab aaAT-III -- Genzyme Allergy therapy -- ALK-Abello/Maxygen, Abciximab -- Centocor ALK-Abello/RP Scherer ABI.001 - Atlantic BioPharmaceuticals allergy vaccines -- Allergy Therapeutics ABT-828 - Abbott Alnidofibatide -- Aventis Pasteur Accutin Alnorine -- SRC VB VECTOR Actinohivin ALP 242 -- Gruenenthal activin -- Biotech Australia, Human Alpha antitrypsin -- Arriva/Hyland Therapeutics Immuno/ProMetic/Protease Sciences activin -- Curis Alpha-1 antitrypsin - Cutter, Bayer, PPL AD 439 – Tanox Therapeutics, Profile, ZymoGenetics, AD 519 – Tanox Adalimumab -- Cambridge Antibody Tech. Arriva Alpha-1 protease inhibitor -- Genzyme Adenocarcinoma vaccine – Biomira -- NIS Transgenics, Welfide Corp. Adenosine A2B receptor antagonists --Alpha-galactose fusion protein -Adenosine Therapeutics **Immunomedics** ADP-001 - Axis Genetics Alpha-galactosidase A -- Research AF 13948 - Affymax Corporation Technologies Afelimomab – Knoll Alpha-glucosidase - Genzyme, Novazyme AFP-SCAN - Immunomedics Alpha-lactalbumin AG 2195 – Corixa Alpha-L-iduronidase -- Transkaryotic agalsidase alfa -- Transkaryotic Therapies Therapies, BioMarin agalsidase beta -- Genzyme alteplase -- Genentech AGENT- Antisoma alvircept sudotox -- NIH AI 300 – Autolmmune ALX1-11 -sNPS Pharmaceuticals AI-101 - Teva Alzheimer's disease gene therapy -Al-102 - Teva

FIG. 1A

Anti-B4 MAb-DC1 conjugate -- ImmunoGen AM-133 -- AMRAD Anti-B7 antibody PRIMATIZED -- IDEC Amb a 1 immunostim conj. -- Dynavax Anti-B7-1 MAb 16-10A1 AMD 3100 - AnorMED -- NIS Anti-B7-1 MAb 1G10 AMD 3465 - AnorMED -- NIS Anti-B7-2 MAb GL-1 AMD 3465 – AnorMED -- NIS Anti-B7-2-gelonin immunotoxin -AMD Fab -- Genentech Antibacterials/antifungals --Amediplase - Menarini, Novartis Diversa/IntraBiotics AM-F9 Anti-beta-amyloid monoclonal antibodies --Amoebiasis vaccine Cambridge Antibody Tech., Wyeth-Ayerst Amphiregulin -- Octagene Anti-BLyS antibodies -- Cambridge anakinra -- Amgen Antibody Tech. /Human Genome Sciences analgesic -- Nobex Antibody-drug conjugates -- Seattle ancestim -- Amgen Genetics/Eos AnergiX.RA - Corixa, Organon Anti-C5 MAb BB5-1 -- Alexion Angiocidin -- InKine Anti-C5 MAb N19-8 -- Alexion angiogenesis inhibitors -- ILEX Anti-C8 MAb AngioMab - Antisoma anticancer cytokines -- BioPulse Angiopoietins -- Regeneron/Procter & anticancer matrix - Telios Integra Gamble Anticancer monoclonal antibodies - ARIUS, angiostatin -- EntreMed Angiostatin/endostatin gene therapy --Immunex anticancer peptides - Maxygen, Micrologix Genetix Pharmaceuticals Anticancer prodrug Tech. -- Alexion angiotensin-II, topical -- Maret **Antibody Technologies** Anthrax -- EluSys Therapeutics/US Army anticancer Troy-Bodies -- Affite -- Affitech Medical Research Institute anticancer vaccine -- NIH Anthrax vaccine Anti platelet-derived growth factor D human anticancers -- Epimmune Anti-CCR5/CXCR4 sheep MAb -- KS monoclonal antibodies -- CuraGen Biomedix Holdings Anti-17-1A MAb 3622W94 --Anti-CD11a MAb KBA -GlaxoSmithKline Anti-CD11a MAb M17 Anti-2C4 MAb -- Genentech anti-4-1BB monoclonal antibodies -- Bristol- Anti-CD11a MAb TA-3 -Anti-CD11a MAb WT.1 -Myers Squibb Anti-CD11b MAb -- Pharmacia Anti-Adhesion Platform Tech. -- Cytovax Anti-adipocyte MAb -- Cambridge Antibody Anti-CD11b MAb LM2 Anti-CD154 MAb -- Biogen Tech./ObeSys Anti-CD16-anti-CD30 MAb -- Biotest antiallergics -- Maxygen Anti-CD18 MAb -- Pharmacia antiallergy vaccine -- Acambis Anti-CD19 MAb B43 -Anti-alpha-4-integrin MAb Anti-angiogenesis monoclonal antibodies -- Anti-CD19 MAb -liposomal sodium butyrate conjugate -KS Biomedix/Schering AG

FIG. 1B

Anti-CD19 MAb-saporin conjugate -	Anti-CD4 MAb KT6
Anti-CD19-dsFv-PE38-immunotoxin -	Anti-CD4 MAb OX38
Anti-CD2 MAb 12-15 -	Anti-CD4 MAb PAP conjugate Bristol-
Anti-CD2 MAb B-E2 Diaclone	Myers Squibb
Anti-CD2 MAb OX34 –	Anti-CD4 MAb RIB 5-2
Anti-CD2 MAb OX54 –	Anti-CD4 MAb W3/25
Anti-CD2 MAb OX55 –	Anti-CD4 MAb YTA 3.1.2
Anti-CD2 MAb RM2-1	Anti-CD4 MAb YTS 177-9
Anti-CD2 MAb RM2-2	Anti-CD40 ligand MAb 5c8 Biogen
Anti-CD2 MAb RM2-4	Anti-CD40 MAb
Anti-CD20 MAb BCA B20	Anti-CD40 MAb 5D12 - Tanox
Anti-CD20-anti-Fc alpha RI bispecific MAb	-Anti-CD44 MAb A3D8
Medarex, Tenovus	Anti-CD44 MAb GKWA3
Anti-CD22 MAb-saporin-6 complex –	Anti-CD44 MAb IM7
Anti-CD3 immunotoxin –	Anti-CD44 MAb KM81
Anti-CD3 MAb 145-2C11 Pharming	Anti-CD44 variant monoclonal antibodies
Anti-CD3 MAb CD4lgG conjugate	Corixa/Hebrew University
Genentech	Anti-CD45 MAb BC8-I-131
Anti-CD3 MAb humanised – Protein Design	n, Anti-CD45RB MAb
RW Johnson	Anti-CD48 MAb HuLy-m3
Anti-CD3 MAb WT32	Anti-CD48 MAb WM-63
Anti-CD3 MAb-ricin-chain-A conjugate –	Anti-CD5 MAb Becton Dickinson
Anti-CD3 MAb-xanthine-oxidase conjugate	Anti-CD5 MAb OX19
Alti-Opo William Administration of the second of the secon	Anti-CD6 MAD
Anti-CD30 MAb BerH2 Medac	Anti-CD7 MAb-PAP conjugate
Anti-CD30 MAb-saporin conjugate	Anti-CD7 MAb-ricin-chain-A conjugate
Anti-CD30-scFv-ETA'-immunotoxin	Anti-CD8 MAb – Amerimmune, Cytodyn,
Anti-CD38 MAb AT13/5	Becton Dickinson
Anti-CD38 MAb-saporin conjugate	Anti-CD8 MAb 2-43
Anti-CD3-anti-CD19 bispecific MAb	Anti-CD8 MAb OX8
Anti-CD3-anti-EGFR MAb	Anti-CD80 MAb P16C10 IDEC
Anti-CD3-anti-interleukin-2-receptor MAb	Anti-CD80 MAb P7C10 ID Vaccine
Anti-CD3-anti-MOv18 MAb Centocor	Anti-CD8-idarubicin conjugate
Anti-CD3-anti-SCLC bispecific MAb	Anti-CEA MAb CE-25
Anti-CD4 idiotype vaccine	Anti-CEA MAb MN 14 – Immunomedics
Anti-CD4 MAb – Centocor, IDEC	Anti-CEA MAb MN14-PE40 conjugate –
Pharmaceuticals, Xenova Group	Immunomedics
Anti-CD4 MAb 16H5	Anti-CEA MAb T84.66-interleukin-2
Anti-CD4 MAb 4162W94 GlaxoSmithKli	ne conjugate
Anti-CD4 MAb B-F5 Diaclone	Anti-CEA sheep MAb KS Biomedix
Anti-CD4 MAb GK1-5	Holdings
/ uld Ob Walk Oil -	-

FIG. 1C

Anti-cell surface monoclonal antibodies	Anti-HIV antibody Epicyte
	anti-HIV catalytic antibody - Hesed Biomed
— — — — — — — — — — — — — — — — — — —	anti-HIV fusion protein Idun
	anti-HIV proteins Cangene
	Anti-HM1-24 MAb Chugai
1 (11) O1114 111 12	Anti-hR3 MAb
	Anti-Human-Carcinoma-Antigen MAb
Biomed	Epicyte
anti-EGFR immunotoxin IVAX	Anti-ICAM-1 MAb Boehringer Ingelheim
Anti-EGFR MAb Abgenix	Anti-ICAM-1 MAb 1A-29 Pharmacia
	Anti-ICAM-1 MAb HA58
	Anti-ICAM-1 MAb YN1/1.7.4
Anti-EGFR MAb-DM1 conjugate	Anti-ICAM-3 MAb ICM3 ICOS
ImmunoGen	Anti-idiotype breast cancer vaccine 11D10
Anti-EGFR MAb-LA1 –	Anti-idiotype breast cancer vaccine
Anti-EGFR sheep MAb KS Biomedix	ACA14C5 –
Anti-FAP MAb F19-I-131	Anti-idiotype cancer vaccine ImClone
	Systems/Merck KGaA ImClone, Viventia
Anti-Fas IgM MAb CH11	Biotech
Anti-Fas MAb Jo2	Anti-idiotype cancer vaccine 1A7 Titan
Anti-Fas MAb RK-8 Anti-Flt-1 monoclonal antibodies ImClone	
Anti-fungal peptides State University of	Anti-idiotype cancer vaccine TriAb - Titan
	Anti-idiotype Chlamydia trachomatis
New York	vaccine
antifungal tripeptides BTG Anti-ganglioside GD2 antibody-interleukin-2	
Anti-ganglioside GDZ antibody-interledkin-z	Novartis
fusion protein Lexigen	Anti-idiotype colorectal cancer vaccine
Anti-GM2 MAb Kyowa	Onyvax
Anti-GM-CSF receptor monoclonal antibodies AMRAD	Anti-idiotype melanoma vaccine IDEC
	Pharmaceuticals
Anti-gp130 MAb Tosoh Anti-HCA monoclonal antibodies	Anti-idiotype ovarian cancer vaccine ACA
	125
AltaRex/Epigen	Anti-idiotype ovarian cancer vaccine AR54 -
Anti-hCG antibodies Abgenix/AVI	- AltaRex
BioPharma	Anti-idiotype ovarian cancer vaccine CA-
Anti-heparanase human monoclonal antibodies Oxford	125 – AltaRex, Biomira
	Anti-IgE catalytic antibody Hesed Biomed
Glycosciences/Medarex	Anti-IgE MAb E26 Genentech
Anti-hepatitis C virus human monoclonal	Anti-IGF-1 MAb
antibodies XTL Biopharmaceuticals	anti-inflammatory – GeneMax
Anti-HER-2 antibody gene therapy	anti-inflammatory peptide BTG
Anti-herpes antibody Epicyte	anti-minimistor) popular 210

FIG. 1D

Biomedix Holdings

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Anti-mu MAb -- Novartis anti-integrin peptides -- Burnha Anti-interferon-alpha-receptor MAb 64G12 -- Anti-MUC-1 MAb Anti-Nogo-A MAb IN1 Pharma Pacific Management Anti-nuclear autoantibodies -- Procyon Anti-interferon-gamma MAb -- Protein Anti-ovarian cancer monoclonal antibodies -Design Labs Anti-interferon-gamma polyclonal antibody - - Dompe Anti-p185 monoclonal antibodies - Advanced Biotherapy Anti-p43 MAb Anti-interleukin-10 MAb --Antiparasitic vaccines Anti-interleukin-12 MAb -Anti-interleukin-1-beta polyclonal antibody -- Anti-PDGF/bFGF sheep MAb -- KS **Biomedix** R&D Systems Anti-properdin monoclonal antibodies --Anti-interleukin-2 receptor MAb 2A3 Abgenix/Gliatech Anti-interleukin-2 receptor MAb 33B3-1 --Anti-PSMA MAb J591 -- BZL Biologics Immunotech Anti-Rev MAb gene therapy -Anti-interleukin-2 receptor MAb ART-18 Anti-RSV antibodies – Epicyte, Intracell Anti-interleukin-2 receptor MAb LO-Tact-1 Anti-RSV monoclonal antibodies --Anti-interleukin-2 receptor MAb Mikbeta1 Medarex/Medimmune, Applied Molecular Anti-interleukin-2 receptor MAb NDS61 Evolution/Medimmune Anti-interleukin-4 MAb 11B11 Anti-RSV MAb, inhalation --Anti-interleukin-5 MAb -- Wallace Alkermes/Medimmune Laboratories Anti-RT gene therapy Anti-interleukin-6 MAb - Centocor, Antisense K-ras RNA gene therapy Diaclone, Pharmadigm Anti-SF-25 MAb Anti-interleukin-8 MAb -- Xenotech Anti-sperm antibody -- Epicyte Anti-JL1 MAb Anti-Tac(Fv)-PE38 conjugate Anti-Klebsiella sheep MAb -- KS Biomedix Anti-TAPA/CD81 MAb AMP1 **Holdings** Anti-tat gene therapy Anti-Laminin receptor MAb-liposomal Anti-TCR-alphabeta MAb H57-597 doxorubicin conjugate Anti-TCR-alphabeta MAb R73 Anti-LCG MAb -- Cytoclonal Anti-tenascin MAb BC-4-I-131 Anti-lipopolysaccharide MAb -- VitaResc Anti-TGF-beta human monoclonal Anti-L-selectin monoclonal antibodies -antibodies -- Cambridge Antibody Tech., Protein Design Labs, Abgenix, Stanford Genzyme University Anti-TGF-beta MAb 2G7 -- Genentech Anti-MBL monoclonal antibodies --Antithrombin III -- Genzyme Transgenics, Alexion/Brigham and Women's Hospital Aventis, Bayer, Behringwerke, CSL, Anti-MHC monoclonal antibodies Anti-MIF antibody humanised - IDEC, Myriad Anti-Thy1 MAb Cytokine PharmaSciences Anti-Thy1.1 MAb Anti-MRSA/VRSA sheep MAb -- KS

FIG. 1E

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Anti-tissue factor/factor VIIA sheep MAb -- ARGENT gene delivery systems -- ARIAD Arresten KS Biomedix ART-123 -- Asahi Kasei Anti-TNF monoclonal antibodies arylsulfatase B -- BioMarin Centocor, Chiron, Peptech, Pharacia, Arylsulfatase B, Recombinant human --Serono BioMarin Anti-TNF sheep MAb -- KS Biomedix AS 1051 -- Ajinomoto Holdings ASI-BCL -- Intracell Anti-TNFalpha MAb - Genzyme Anti-TNFalpha MAb B-C7 -- Diaclone ATL-101 -- Alizyme atrial natriuretic peptide -- Pharis Anti-tooth decay MAb -- Planet BioTech. Aurintricarboxylic acid-high molecular antitumour RNases -- NIH weight Anti-VCAM MAb 2A2 -- Alexion autoimmune disorders -- GPC Anti-VCAM MAb 3F4 -- Alexion Biotech/MorphoSys Anti-VCAM-1 MAb Autoimmune disorders and transplant Anti-VEC MAb -- ImClone rejection -- Bristol-Myers Squibb/Genzyme Anti-VEGF MAb -- Genentech Tra Anti-VEGF MAb 2C3 Autoimmune disorders/cancer ---Anti-VEGF sheep MAb -- KS Biomedix Abgenix/Chiron, /CuraGen Holdinas Autotaxin Anti-VLA-4 MAb HP1/2 -- Biogen Avicidin -- NeoRx Anti-VLA-4 MAb PS/2 axogenesis factor-1 -- Boston Life Sciences Anti-VLA-4 MAb R1-2 Axokine -- Regeneron Anti-VLA-4 MAb TA-2 Anti-VRE sheep MAb -- KS Biomedix B cell lymphoma vaccine -- Biomira B7-1 gene therapy -Holdings BABS proteins -- Chiron ANUP -- TranXenoGen BAM-002 -- Novelos Therapeutics ANUP-1 -- Pharis Bav-16-9996 -- Bayer AOP-RANTES -- Senetek Apan-CH -- Praecis Pharmaceuticals Bay-39-9437 -- Bayer Bay-50-4798 -- Bayer APC-8024 -- Demegen BB-10153 -- British Biotech ApoA-1 -- Milano, Pharmacia BBT-001 -- Bolder BioTech. Apogen -- Alexion BBT-002 -- Bolder BioTech. apolipoprotein A1 -- Avanir BBT-003 -- Bolder BioTech. Apolipoprotein E -- Bio-Tech. General BBT-004 -- Bolder BioTech. Applaggin -- Biogen BBT-005 -- Bolder BioTech. aprotinin -- ProdiGene BBT-006 -- Bolder BioTech. APT-070C -- AdProTech BBT-007 -- Bolder BioTech. AR 177 -- Aronex Pharmaceuticals BCH-2763 -- Shire AR 209 - Aronex Pharmaceuticals, BCSF -- Millenium Biologix Antigenics BDNF - Regeneron - Amgen AR545C

FIG. 1F

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Becaplermin -- Johnson & Johnson, Chiron BST-3002 -- BioStratum Bectumomab – Immunomedics BTI 322 butyryicholinesterase -- Shire Beta-adrenergic receptor gene therapy --University of Arkansas C 6822 -- COR Therapeutics C1 esterase inhibitor -- Pharming Bi 51013 -- Behringwerke AG C3d adjuvant -- AdProTech BIBH 1 -- Boehringer Ingelheim CAB-2.1 -- Millennium BIM-23190 -- Beaufour-lpsen calcitonin - Inhale Therapeutics Systems, birch pollen immunotherapy -- Pharmacia bispecific fusion proteins -- NIH Aventis, Genetronics, TranXenoGen, Unigene, Rhone Poulenc Rohrer Bispecific MAb 2B1 -- Chiron calcitonin -- oral -- Nobex, Emisphere, Bitistatin BIWA 4 -- Boehringer Ingelheim Pharmaceutical Discovery Calcitonin gene-related peptide -- Asahi blood substitute - Northfield, Baxter Intl. Kasei -- Unigene BLP-25 -- Biomira BLS-0597 -- Boston Life Sciences calcitonin, human -- Suntory BLyS -- Human Genome Sciences calcitonin, nasal – Novartis, Unigene BLyS radiolabelled -- Human Genome calcitonin, Panoderm -- Elan calcitonin, Peptitrol -- Shire Sciences calcitonin, salmon -- Therapicon BM 06021 -- Boehringer Mannheim calin -- Biopharm BM-202 -- BioMarin BM-301 -- BioMarin Calphobindin I calphobindin I -- Kowa BM-301 -- BioMarin calreticulin -- NYU BM-302 -- BioMarin BMP 2 -- Genetics Institute/Medtronic-Campath-1G Campath-1M Sofamor Danek, Genetics Institute/ cancer therapy -- Cangene Collagenesis, Genetics cancer vaccine - Aixlie, Aventis Pasteur, Institute/Yamanouch BMP 2 gene therapy Center of Molecular Immunology, YM BMP 52 -- Aventis Pasteur, Biopharm BioSciences, Cytos, Genzyme, Transgenics, Globelmmune, Igeneon, BMP-2 -- Genetics Institute ImClone, Virogenetics, InterCell, Iomai, BMS 182248 --- Bristol-Myers Squibb Jenner Biotherapies, Memorial Sloan-BMS 202448 -- Bristol-Myers Squibb Kettering Cancer Center, Sydney Kimmel bone growth factors -- IsoTis Cancer Center, Novavax, Protein BPC-15 -- Pfizer Sciences, Argonex, SIGA brain natriuretic peptide – Cancer vaccine ALVAC-CEA B7.1 --Breast cancer -- Oxford Aventis Pasteur/Therion Biologics GlycoSciences/Medarex Breast cancer vaccine -- Therion Biologics, Cancer vaccine CEA-TRICOM -- Aventis Pasteur/Therion Biologics Oregon BSSL -- PPL Therapeutics Cancer vaccine gene therapy -- Cantab BST-2001 – BioStratum **Pharmaceuticals**

FIG. 1G

CETP vaccine -- Avant Cancer vaccine HER-2/neu -- Corixa Cancer vaccine THERATOPE -- Biomira Cetrorelix cancer vaccine, PolyMASC -- Valentis Cetuximab CGH 400 -- Novartis Candida vaccine – Corixa, Inhibitex CGP 42934 -- Novartis Canstatin -- ILEX CGP 51901 – Tanox CAP-18 -- Panorama CGRP -- Unigene Cardiovascular gene therapy -- Collateral CGS 27913 -- Novartis **Therapeutics** CGS 32359 -- Novartis carperitide -- Suntory Chagas disease vaccine -- Corixa Casocidin-1 -- Pharis CAT 152 -- Cambridge Antibody Tech. chemokines -- Immune Response CAT 192 -- Cambridge Antibody Tech. CHH 380 -- Novartis chitinase - Genzyme, ICOS CAT 213 -- Cambridge Antibody Tech. Chlamydia pneumoniae vaccine -- Antex Catalase-- Enzon **Biologics** Cat-PAD -- Circassia Chlamydia trachomatis vaccine -- Antex CB 0006 -- Celitech **Biologics** CCK(27-32)-- Akzo Nobel Chlamydia vaccine -- GlaxoSmithKline CCR2-64I -- NIH Cholera vaccine CVD 103-HgR -- Swiss CD, Procept -- Paligent Serum and Vaccine Institute Berne CD154 gene therapy Cholera vaccine CVD 112 -- Swiss Serum CD39 -- Immunex and Vaccine Institute Berne CD39-L2 -- Hyseq Cholera vaccine inactivated oral -- SBL CD39-L4 -- Hyseq Vaccin CD4 fusion toxin -- Senetek Chrysalin -- Chrysalis BioTech. CD4 lgG -- Genentech CI-782 -- Hitachi Kase CD4 receptor antagonists ---Ciliary neurotrophic factor - Fidia, Roche Pharmacopeia/Progenics CIM project -- Active Biotech CD4 soluble -- Progenics CL 329753 -- Wyeth-Ayerst CD4, soluble -- Genzyme Transgenics CL22, Cobra -- ML Laboratories CD40 ligand -- Immunex Clenoliximab -- IDEC CD4-ricin chain A -- Genentech Clostridium difficile antibodies -- Epicyte CD59 gene therapy -- Alexion clotting factors -- Octagene CD8 TIL cell therapy -- Aventis Pasteur CMB 401 -- Celltech CD8, soluble -- Avidex CNTF -- Sigma-Tau CD95 ligand -- Roche Cocaine abuse vaccine - Cantab, CDP 571 -- Celltech ImmuLogic, Scripps CDP 850 -- Celltech coccidiomycosis vaccine -- Arizo CDP 870 -- Celltech collagen -- Type! -- Pharming CDS-1 -- Ernest Orlando Collagen formation inhibitors -- FibroGen Cedelizumab -- Ortho-McNeil Cetermin -- Insmed FIG. 1H

Collagen/hydroxyapatite/bone growth factor CY 1747 -- Epimmune -- Aventis Pasteur, Biopharm, Orquest CY 1748 -- Epimmune Cyanovirin-N collagenase -- BioSpecifics Colorectal cancer vaccine -- Wistar Institute Cystic fibrosis therapy -- CBR/IVAX Component B, Recombinant -- Serono CYT 351 Connective tissue growth factor inhibitors -- cytokine Traps -- Regeneron cytokines - Enzon, Cytoclonal FibroGen/Taisho Cytomegalovirus glycoprotein vaccine -Contortrostatin Chiron, Aquila Biopharmaceuticals, contraceptive vaccine -- Zonagen Aventis Pasteur, Virogenetics Contraceptive vaccine hCG Cytomegalovirus vaccine live -- Aventis Contraceptive vaccine male reversible --**Pasteur IMMUCON** Cytosine deaminase gene therapy --Contraceptive vaccine zona pellucida --GlaxoSmithKline Zonagen DA-3003 -- Dong-A Copper-64 labelled MAb TETA-1A3 -- NCI DAB389interleukin-6 -- Senetek Coralyne DAB389interleukin-7 Corsevin M DAMP[^] -- Incyte Genomics C-peptide analogues -- Schwarz Daniplestim -- Pharmacia CPI-1500 -- Consensus darbepoetin alfa -- Amgen CRF -- Neurobiological Tech. DBI-3019 -- Diabetogen cRGDfV pentapeptide -DCC -- Genzyme CRL 1095 -- CytRx DDF -- Hyseq CRL 1336 -- CytRx decorin -- Integra, Telios CRL 1605 --- CytRx defensins -- Large Scale Biology CS-560 - Sankyo DEGR-Vila CSF -- ZymoGenetics Delmmunised antibody 3B6/22 AGEN CSF-G - Hangzhou, Dong-A, Hanmi CSF-GM - Cangene, Hunan, LG Chem Deimmunised anti-cancer antibodies --Biovation/Viragen CSF-M -- Zarix Dendroamide A CT 1579 - Merck Frosst Dengue vaccine -- Bavarian Nordic, Merck CT 1786 - Merck Frosst denileukin diftitox -- Ligand CT-112[^] -- BTG DES-1101 -- Desmos CTB-134L -- Xenova desirudin -- Novartis CTC-111 -- Kaketsuken desmopressin -- Unigene CTGF -- FibroGen Desmoteplase - Merck, Schering AG CTLA4-Ig -- Bristol-Myers Squibb Destabilase CTLA4-Ig gene therapy -Diabetes gene therapy – DeveloGen, Pfizer CTP-37 -- AVI BioPharma Diabetes therapy -- Crucell C-type natriuretic peptide -- Suntory Diabetes type 1 vaccine -- Diamyd CVS 995 - Corvas Intl. **Therapeutics** CX 397 - Nikko Kyodo

FIG. 11

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DiaCIM -- YM BioSciences EGF-P64k vaccine -- Center of Molecular Immunology dialytic oligopeptides -- Research Corp EL 246 -- LigoCyte Diamyd -- Diamyd Therapeutics elastase inhibitor -- Synergen DiaPep227-- Pepgen elcatonin -- Therapicon DiavaX -- Corixa Diphtheria tetanus pertussis-hepatitis B EMD 72000 -- Merck KGaA vaccine -- GlaxoSmithKline Emdogain -- BIORA emfilermin -- AMRAD DIR therapy -- Solis Therapeutics -Emoctakin -- Novartis DNase -- Genentech enamel matrix protein -- BIORA Dornase alfa -- Genentech Dornase alfa, inhalation -- Genentech Endo III -- NYU Doxorubicin-anti-CEA MAb conjugate endostatin – EntreMed, Pharis Enhancins -- Micrologix **Immunomedics** Enlimomab -- Isis Pharm. DP-107 -- Trimeris drotrecogin alfa -- Eli Lilly Enoxaparin sodium -- Pharmuka enzyme linked antibody nutrient depletion **DTctGMCSF** DTP-polio vaccine -- Aventis Pasteur therapy -- KS Biomedix Holdings Eosinophil-derived neutralizing agent – DU 257-KM231 antibody conjugate --EP-51216 -- Asta Medica Kvowa dural graft matrix -- Integra EP-51389 -- Asta Medica EPH family ligands -- Regeneron Duteplase – Baxter Intl. Epidermal growth factor -- Hitachi Kasei, DWP-401 -- Daewoong Johnson & Johnson DWP-404 -- Daewoong Epidermal growth factor fusion toxin --DWP-408 -- Daewoong E coli O157 vaccine -- NIH Senetek Epidermal growth factor-genistein -E21-R -- BresaGen Eastern equine encephalitis virus vaccine - EPI-HNE-4 -- Dyax EPI-KAL2 -- Dyax Echicetin – Epoetin-alfa - Amgen, Dragon Echinhibin 1 – Pharmaceuticals, Nanjing Huaxin Echistatin -- Merck Epratuzumab – Immunomedics Echitamine – EC-SOD -- PPL Therapeutics Epstein-Barr virus vaccine --Aviron/SmithKline Beecham, Bioresearch EDF -- Ajinomoto Eptacog alfa -- Novo Nordisk EDN derivative -- N!H EDNA -- NIH Eptifibatide -- COR Therapeutics erb-38 -Edobacomab -- XOMA Edrecolomab -- Centocor Erlizumab -- Genentech EF 5077 Efalizumab -- Genentech

FIG. 1J

EGF fusion toxin – Seragen, Ligand

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erythropoietin -- Alkermes, ProLease, Dong-Fas TR -- Human Genome Sciences A, Elanex, Genetics Institute, LG Chem, Felvizumab -- Scotgen Protein Sciences, Serono, Snow Brand, FFR-VIIa -- Novo Nordisk SRC VB VECTOR, Transkaryotic FG-001 - F-Gene FG-002 - F-Gene Therapies Erythropoietin Beta -- Hoffman La Roche FG-004 – F-Gene FG-005 - F-Gene Erythropoietin/Epoetin alfa -- Chugai Escherichia coli vaccine -- North American FGF + fibrin -- Repair Fibrimage -- Bio-Tech. General Vaccine, SBL Vaccin, Swiss Serum and fibrin-binding peptides – ISIS Innovation Vaccine Institute Berne fibrinogen -- PPL Therapeutics, Pharming etanercept -- Immunex fibroblast growth factor - Chiron, NYU, examorelin – Mediolanum Ramot, ZymoGenetics exonuclease VII fibrolase conjugate -- Schering AG F 105 -- Centocor Filgrastim -- Amgen F-992 -- Fomix filgrastim -- PDA modified -- Xencor Factor IX – Alpha Therapeutics, Welfide Corp., CSL, enetics Institute/AHP, FLT-3 ligand -- Immunex FN18 CRM9 -Pharmacia, PPL Therapeutics Factor IX gene therapy -- Cell Genesys follistatin -- Biotech Australia, Human Factor VII -- Novo Nordisk, Bayer, Baxter Therapeutics: follitropin alfa - Alkermes, ProLease, Intl. PowderJect, Serono, Akzo Nobel Factor VIIa -- PPL Therapeutics, Follitropin Beta - Bayer, Organon ZymoGenetics FP 59 Factor VIII – Bayer Genentech, Beaufour-Ipsen, CLB, Inex, Octagen, Pharmacia, FSH -- Ferring FSH + LH -- Ferring Pharming F-spondin -- CeNeS Factor VIII -- PEGylated -- Bayer fusion protein delivery system -- UAB Factor VIII fragments -- Pharmacia Research Foundation Factor VIII gene therapy -- Targeted fusion toxins -- Boston Life Sciences Genetics G 5598 -- Genentech Factor VIII sucrose formulation – Bayer, GA-II - Transkaryotic Therapies Genentech Gamma-interferon analogues -- SRC VB Factor VIII-2 -- Bayer VECTOR Factor VIII-3 -- Bayer Factor Xa inhibitors - Merck, Novo Nordisk, Ganirelix -- Roche gastric lipase -- Meristem Mochida Gavilimomab --Factor XIII -- ZymoGenetics Factors VIII and IX gene therapy -- Genetics G-CSF - Amgen, SRC VB VECTOR Institute/Targeted Genetics GDF-1 -- CeNeS GDF-5 -- Biopharm Famoxin -- Genset GDNF - Amgen Fas (delta) TM protein – LXR BioTech.

FIG. 1K

H5N1 influenza A virus vaccine -- Protein gelsolin -- Biogen Gemtuzumab ozogamicin -- Celltech Sciences Gene-activated epoetin-alfa -- Aventis haemoglobin -- Biopure haemoglobin 3011, Recombinant -- Baxter Pharma -- Transkaryotic Therapies Glanzmann thrombasthenia gene therapy -Healthcare haemoglobin crosfumaril – Baxter Intl. Glatiramer acetate -- Yeda glial growth factor 2 -- CeNeS haemoglobin stabilized -- Ajinomoto GLP-1 -- Amylin, Suntory, TheraTech, haemoglobin, recombinant -- Apex HAF -- Immune Response Watson Hantavirus vaccine GLP-1 peptide analogues - Zealand HB 19 **Pharaceuticals** HBNF -- Regeneron glucagon -- Eli Lilly, ZymoGenetics HCC-1 -- Pharis Glucagon-like peptide-1 7-36 amide -hCG -- Milkhaus Suntory hCG vaccine -- Zonagen Glucocerebrosidase -- Genzyme glutamate decarboxylase -- Genzyme HE-317 -- Hollis-Eden Pharmaceuticals Heat shock protein cancer and influenza **Transgenics** vaccines -- StressGen Glycoprotein S3 -- Kureha Helicobacter pylori vaccine -- Acambis, GM-CSF -- Immunex GM-CSF tumour vaccine -- PowderJect AstraZeneca/CSL, Chiron, Provalis Helistat-G -- GalaGen **GnRH** immunotherapeutic -- Protherics Hemolink -- Hemosol gp75 antigen -- ImClone hepapoietin -- Snow Brand gp96 -- Antigenics heparanase -- InSight GPI 0100 -- Galenica GR 4991W93 -- GlaxoSmithKline heparinase I -- Ibex Granulocyte colony-stimulating factor -heparinase III -- Ibex Hepatitis A vaccine -- American Biogenetic Dong-A Sciences Granulocyte colony-stimulating factor Hepatitis A vaccine inactivated conjugate Hepatitis A vaccine Nothav -- Chiron grass allergy therapy -- Dynavax Hepatitis A-hepatitis B vaccine --GRF1-44 -- ICN Growth Factor - Chiron, Atrigel, Atrix, GlaxoSmithKline hepatitis B therapy -- Tripep Innogenetics, ZymoGenetics, Novo Hepatitis B vaccine - Amgen, Chiron SpA, growth factor peptides -- Biotherapeutics Meiji Milk, NIS, Prodeva, PowderJect, growth hormone -- LG Chem Rhein Biotech growth hormone, Recombinant human --Hepatitis B vaccine recombinant -- Evans Serono Vaccines, Epitec Combiotech, Genentech, GT 4086 -- Gliatech GW 353430 -- GlaxoSmithKline Medlmmune, Merck Sharp & Dohme, Rhein Biotech, Shantha Biotechnics, GW-278884 -- GlaxoSmithKline Vector, Yeda H 11 -- Viventia Biotech

FIG. 1L

Hepatitis B vaccine recombinant TGP 943 -- HIV peptides -- American Home Products HIV vaccine -- Applied bioTech., Axis Takeda Genetics, Biogen, Bristol-Myers Squibb, Hepatitis C vaccine -- Bavarian Nordic, Chiron, Innogenetics Acambis, Genentech, Korea Green Cross, NIS, Oncogen, Protein Sciences Corporation, Hepatitis D vaccine -- Chiron Vaccines Terumo, Tonen Corporation, Wyeth-Hepatitis E vaccine recombinant --Ayerst, Wyeth-Lederle Vaccines-Malvern, Genelabs/GlaxoSmithKline, Novavax hepatocyte growth factor - Panorama, Advanced BioScience Laboratories, Bavarian Nordic, Bavarian Nordic/Statens Sosei Serum Institute, GeneCure, Immune hepatocyte growth factor kringle fragments -Response, Progenics, Therion Biologics, EntreMed Her-2/Neu peptides -- Corixa United Biomedical, Chiron Herpes simplex glycoprotein DNA vaccine - HIV vaccine vCP1433 -- Aventis Pasteur Merck, Wyeth-Lederle Vaccines-Malvern, HIV vaccine vCP1452 -- Aventis Pasteur Genentech, GlaxoSmithKline, Chiron, HIV vaccine vCP205 -- Aventis Pasteur HL-9 -- American BioScience Takeda HM-9239 -- Cytran Herpes simplex vaccine -- Cantab HML-103 -- Hemosol Pharmaceuticals, CEL-SCI, Henderson HML-104 -- Hemosol Morley HML-105 -- Hemosol Herpes simplex vaccine live -- ImClone Systems/Wyeth-Lederle, Aventis Pasteur HML-109 -- Hemosol HML-110 -- Hemosol HGF derivatives -- Dompe HML-121 -- Hemosol hIAPP vaccine -- Crucell Hib-hepatitis B vaccine -- Aventis Pasteur hNLP -- Pharis Hookworm vaccine HIC 1 host-vector vaccines – Henogen HIP-- Altachem Hirudins - Biopharma, Cangene, Dongkook, HPM 1 -- Chugai HPV vaccine -- MediGene Japan Energy Corporation, Pharmacia Corporation, SIR International, Sanofi-HSA -- Meristem HSF - StressGen Synthelabo, Sotragene, Rhein Biotech HSP carriers --Weizmann, Yeda, Peptor HIV edible vaccine -- ProdiGene HIV gp120 vaccine - Chiron, Ajinomoto, HSPPC-70 -- Antigenics HSPPC-96 -- pathogen-derived --GlaxoSmithKline, ID Vaccine, Progenics, VaxGen Antigenics HIV gp120 vaccine gene therapy -HSV 863 -- Novartis HIV gp160 DNA vaccine - PowderJect, HTLV-I DNA vaccine HTLV-I vaccine Aventis Pasteur, Oncogen, Hyland Immuno, Protein Sciences HTLV-II vaccine -- Access HU 901 -- Tanox HIV gp41 vaccine -- Panacos Hu23F2G - ICOS HIV HGP-30W vaccine -- CEL-SCI HIV immune globulin - Abbott, Chiron HuHMFG1

FIG. 1M

HuMax-IL15 -- Genmab HumaLYM -- Intracell HYB 190 -- Hybridon Human krebs statika -- Yamanouchi HYB 676 -- Hybridon human monoclonal antibodies --I-125 MAb A33 -- Celltech Abgenix/Biogen, Abgenix/ Corixa, Ibritumomab tiuxetan -- IDEC Abgenix/Immunex, Abgenix/Lexicon, IBT-9401 -- Ibex Abgenix/ Pfizer, Athersys/Medarex, IBT-9402 -- lbex Biogen/MorphoSys, CAT/Searle, IC 14 -- ICOS Centocor/Medarex, Corixa/Kirin Brewery, Idarubicin anti-Ly-2.1 -Corixa/Medarex, Eos BioTech./Medarex, Eos/Xenerex, Exelixis/Protein Design IDEC 114 -- IDEC IDEC 131 -- IDEC Labs, ImmunoGen/Raven, IDEC 152 -- IDEC Medarex/B. Twelve, MorphoSys/ImmunoGen, XTL **IDM 1 -- IDM** IDPS -- Hollis-Eden Pharmaceuticals Biopharmaceuticals/Dyax, iduronate-2-sulfatase -- Transkaryotic Human monoclonal antibodies --Medarex/Northwest Biotherapeutics. Therapies IGF/IBP-2-13 -- Pharis Medarex/Seattle Genetics IGN-101 -- Igeneon human netrin-1 -- Exelixis human papillomavirus antibodies -- Epicyte IK HIR02 -- Iketon IL-11 -- Genetics Institute/AHP Human papillomavirus vaccine -- Biotech IL-13-PE38 -- NeoPharm Australia, IDEC, StressGen Human papillomavirus vaccine MEDI 501 -- IL-17 receptor -- Immunex IL-18BP -- Yeda MedImmune/GlaxoSmithKline Human papillomavirus vaccine MEDI IL-1Hy1 -- Hyseq IL-1ß -- Celltech 503/MEDI 504 --IL-1ß adjuvant -- Celltech MedImmune/GlaxoSmithKline IL-2 -- Chiron Human papillomavirus vaccine TA-CIN -IL-2 + IL-12 -- Hoffman La-Roche Cantab Pharmaceuticals IL-6/sIL-6R fusion -- Hadasit Human papillomavirus vaccine TA-HPV --IL-6R derivative -- Tosoh Cantab Pharmaceuticals IL-7-Dap 389 fusion toxin -- Ligand Human papillomavirus vaccine TH-GW --IM-862 -- Cytran Cantab/GlaxoSmithKline human polyclonal antibodies -- Biosite/Eos IMC-1C11 -- ImClone imiglucerase -- Genzyme BioTech./ Medarex Immune globulin intravenous (human) -human type II anti factor VIII monoclonal Hoffman La Roche antibodies -- ThromboGenics immune privilege factor -- Proneuron humanised anti glycoprotein lb murine Immunocal -- Immunotec monoclonal antibodies -- ThromboGenics Immunogene therapy -- Briana Bio-Tech HumaRAD -- Intracell Immunoliposomal 5-fluorodeoxyuridine-HuMax EGFR -- Genmab dipalmitate -HuMax-CD4 -- Medarex

FIG. 1N

integrin antagonists -- Merck immunosuppressant vaccine -- Aixlie interferon (Alpha2) -- SRC VB VECTOR, immunotoxin – Antisoma, NIH Viragen, Dong-A, Hoffman La-Roche, ImmuRAIT-Re-188 - Immunomedics Genentech imreg-1 -- Imreg infertility -- Johnson & Johnson, E-TRANS interferon -- BioMedicines, Human Genome Influenza virus vaccine -- Aventis Pasteur, Sciences interferon (Alfa-n3)—Interferon Sciences **Protein Sciences** Intl. inhibin -- Biotech Australia, Human interferon (Alpha), Biphasix -- Helix Therapeutics Inhibitory G protein gene therapy interferon (Alpha)—Amgen, BioNative, Novartis, Genzyme Transgenics, INKP-2001 -- InKine Hayashibara, Inhale Therapeutics Inolimomab -- Diaclone insulin -- AutoImmune, Altea, Biobras, Systems, Medusa, Flamel, Dong-A, GeneTrol, Nastech, Shantha, BioSante, Bio-Tech. General, Chong Kun Dang, Emisphere, Flamel, Provalis, Rhein Wassermann, LG Chem, Sumitomo, Aventis, Behring EGIS, Pepgen, Servier, Biotech, TranXenoGen insulin (bovine) -- Novartis Rhein Biotech. insulin analogue -- Eli Lilly interferon (Alpha2A) interferon (Alpha2B) - Enzon, Schering-Insulin Aspart -- Novo Nordisk insulin detemir -- Novo Nordisk Plough, Biogen, IDEA interferon (Alpha-N1) -- GlaxoSmithKline insulin glargine -- Aventis interferon (beta) - Rentschler, GeneTrol, insulin inhaled – Inhale Therapeutics Meristem, Rhein Biotech, Toray, Yeda, Systems, Alkermes Daiichi, Mochida insulin oral -- Inovax interferon (Beta1A) - Serono, Biogen insulin, AeroDose -- AeroGen insulin, AERx -- Aradigm interferon (beta1A),inhale -- Biogen interferon (ß1b)-- Chiron insulin, BEODAS -- Elan interferon (tau) -- Pepgen insulin, Biphasix -- Helix insulin, buccal -- Generex Interferon alfacon-1 -- Amgen Interferon alpha-2a vaccine insulin, I2R -- Flemington insulin, intranasal -- Bentley Interferon Beta 1b -- Schering/Chiron, InterMune insulin, oral – Nobex, Unigene Interferon Gamma -- Boehringer Ingelheim, insulin, Orasome -- Endorex Sheffield, Rentschler, Hayashibara insulin, ProMaxx -- Epic interferon receptor, Type I -- Serono insulin, Quadrant -- Elan interferon(Gamma1B) -- Genentech insulin, recombinant -- Aventis Interferon-alpha-2b + ribavirin - Biogen, insulin, Spiros -- Elan insulin, Transfersome -- IDEA **ICN** insulin, Zymo, recombinant -- Novo Nordisk Interferon-alpha-2b gene therapy --Schering-Plough insulinotropin -- Sclos Interferon-con1 gene therapy – Insulysin gene therapy – **FIG. 10**

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IPF -- Metabolex interleukin-1 antagonists -- Dompe IR-501 -- Immune Response Interleukin-1 receptor antagonist -- Abbott ISIS 9125 -- Isis Pharmaceuticals Bioresearch, Pharmacia ISURF No. 1554 -- Millennium Interleukin-1 receptor type I -- Immunex ISURF No. 1866 - Iowa State Univer. interleukin-1 receptor Type II -- Immunex Interleukin-10 – DNAX, Schering-Plough ITF-1697 -- Italfarmaco IxC 162 -- Ixion Interleukin-10 gene therapy – interleukin-12 -- Genetics Institute, Hoffman J 695 -- Cambridge Antibody Tech., Genetics Inst., Knoll La-Roche Jagged + FGF -- Repair interleukin-13 -- Sanofi JKC-362 -- Phoenix Pharmaceuticals interleukin-13 antagonists -- AMRAD Interleukin-13-PE38QQR JTP-2942 – Japan Tobacce Juman monoclonal antibodies -interleukin-15 -- Immunex interleukin-16 -- Research Corp Medarex/Raven K02 -- Axys Pharmaceuticals interleukin-18 -- GlaxoSmithKline Keliximab -- IDEC Interleukin-1-alpha -- Immunex/Roche interleukin-2 -- SRC VB VECTOR, Keyhole limpet haemocyanin Ajinomoto, Biomira KGF -- Amgen KM 871 -- Kyowa Interleukin-3 -- Cangene **KPI 135 -- Scios** Interleukin-4 -- Immunology Ventures, **KPI-022** -- Scios Sanofi Winthrop, Schering-Plough, Kringle 5 Immunex/ Sanofi Winthrop, Bayer, Ono KSB 304 interleukin-4 + TNF-Alpha -- NIH KSB-201 -- KS Biomedix interleukin-4 agonist -- Bayer L 696418 -- Merck interleukin-4 fusion toxin -- Ligand Interleukin-4 receptor - Immunex, Immun L 703801 -- Merck Interleukin-6 - Ajinomoto, Cangene, Yeda, L1 -- Acorda L-761191 -- Merck Genetics Institute, Novartis lactoferrin – Meristem, Pharming, Agennix interleukin-6 fusion protein – lactoferrin cardio -- Pharming interleukin-6 fusion toxin – Ligand, Serono LAG-3 -- Serono interleukin-7 -- IC Innovations interleukin-7 receptor -- Immunex LAIT -- GEMMA LAK cell cytotoxin -- Arizona interleukin-8 antagonists -- Kyowa lamellarins -- PharmaMar/University of Hakko/Millennium/Pfizer Malaga interleukin-9 antagonists -- Genaera Iaminin A peptides -- NIH interleukins -- Cel-Sci lodine I 131 tositumomab -- Corixa lanoteplase -- Genetics Institute laronidase -- BioMarin ior EPOCIM -- Center of Molecular Lassa fever vaccine Immunology LCAT -- NIH lor-P3 -- Center of Molecular Immunology LDP 01 -- Millennium IP-10 -- NIH

FIG. 1P

Lyme disease vaccine -- Aquila LDP 02 -- Millennium Biopharmaceuticals, Aventis, Pasteur, Lecithinized superoxide dismutase --Symbicom, GlaxoSmithKline, Hyland Seikagaku Immuno, Medimmune LelF adjuvant -- Corixa Lymphocytic choriomeningitis virus vaccine leishmaniasis vaccine -- Corixa lymphoma vaccine - Biomira, Genitope lenercept -- Hoffman La-Roche Lenograstim - Aventis, Chugai LYP18 lys plasminogen, recombinant lepirudin -- Aventis Lysosomal storage disease gene therapy -leptin – Amgen, IC Innovations Leptin gene therapy -- Chiron Corporation Avigen leptin, 2nd-generation -- Amgen lysostaphin -- Nutrition 21 M 23 -- Gruenenthal leridistim -- Pharmacia M1 monoclonal antibodies -- Acorda leuprolide, ProMaxx -- Epic **Therapeutics** leuprorelin, oral -- Unigene MA 16N7C2 – Corvas Intl. LeuTech -- Papatin malaria vaccine -- GlaxoSmithKline, LEX 032 -- SuperGen AdProTech, Antigenics, Apovia, Aventis LiDEPT -- Novartis Pasteur, Axis Genetics, Behringwerke, lipase -- Altus Biologics CDCP, Chiron Vaccines, Genzyme lipid A vaccine -- EntreMed Transgenics, Hawaii, MedImmune, NIH, lipid-linked anchor Tech. - ICRT, ID NYU, Oxxon, Roche/Saramane, Biotech **Biomedical** liposome-CD4 Tech. -- Sheffield Australia, Rx Tech Malaria vaccine CDC/NIIMALVAC-1 Listeria monocytogenes vaccine malaria vaccine, multicomponent LMB₁ mammaglobin -- Corixa LMB 7 LMB 9 -- Battelle Memorial Institute, NIH mammastatin -- Biotherapeutics mannan-binding lectin -- Natlmmu LM-CD45 --- Cantab Pharmaceuticals mannan-MUC1 -- Psiron Iovastatin -- Merck MAP 30 LSA-3 Marinovir -- Phytera LT-ß receptor -- Biogen lung cancer vaccine -- Corixa MARstem -- Maret MB-015 -- Mochida lusupultide -- Scios MBP -- ImmuLogic L-Vax -- AVAX MCI-028 -- Mitsubishi-Tokyo LY 355455 -- Eli Lilly MCIF -- Human Genome Sciences LY 366405 -- Eli Lilly MDC --- Advanced BioScience -- Akzo LY-355101 -- Eli Lilly Lyme disease DNA vaccine -- Vical/Aventis Nobel, ICOS MDX 11 -- Medarex Pasteur MDX 210 -- Medarex MDX 22 -- Medarex

FIG. 1Q

MDX 22

Methionine lyase gene therapy --MDX 240 -- Medarex AntiCancer **MDX 33** Met-RANTES – Genexa Biomedical, MDX 44 -- Medarex MDX 447 -- Medarex Serono Metreleptin MDX H210 -- Medarex MDX RA -- Houston BioTech., Medarex MGDF -- Kirin MGV -- Progenics ME-104 -- Pharmexa micrin -- Endocrine Measles vaccine microplasmin -- ThromboGenics Mecasermin -- Cephalon/Chiron, Chiron MIF -- Genetics Institute MEDI 488 -- Medimmune migration inhibitory factor -- NIH MEDI 500 Mim CD4.1 – Xycte Therapies MEDI 507 -- BioTransplant mirostipen -- Human Genome Sciences melanin concentrating hormone ---MK 852 -- Merck Neurocrine Biosciences Mobenakin -- NIS melanocortins -- OMRF Melanoma monoclonal antibodies -- Viragenmolgramostim -- Genetics Institute, Novartis monoclonal antibodies -- Abgenix/Celltech, melanoma vaccine -- GlaxoSmithKline, Immusol/ Medarex, Viragen/ Roslin Akzo Nobel, Avant, Aventis Pasteur, Institute, Cambridge Antibody Tech./Elan Bavarian Nordic, Biovector, CancerVax, Genzyme Molecular Oncology, Humbolt, MAb 108 – ImClone Systems, Memorial, NYU, Oxxon MAb 10D5 --MAb 14.18-interleukin-2 immunocytokine --Melanoma vaccine Magevac -- Therion memory enhancers -- Scios Lexigen MAb 14G2a -meningococcal B vaccine -- Chiron MAb 15A10 meningococcal vaccine -- CAMR Meningococcal vaccine group B conjugate - MAb 170 -- Biomira - North American Vaccine MAb 177Lu CC49 ---MAb 17F9 Meningococcal vaccine group B MAb 1D7 recombinant -- BioChem Vaccines, MAb 1F7 - Immune Network Microscience Meningococcal vaccine group Y conjugate - MAb 1H10-doxorubicin conjugate MAb 26-2F North American Vaccine Meningococcal vaccine groups A B and C MAb 2A11 MAb 2E1 -- RW Johnson conjugate -- North American Vaccine MAb 2F5 Mepolizumab -- GlaxoSmithKline MAb 31.1 -- International BioImmune Metastatin – EntreMed, Takeda Met-CkB7 -- Human Genome Sciences MAb 32 -- Cambridge Antibody Tech., met-enkephalin -- TNI METH-1 -- Human Genome Sciences Peptech MAb 323A3 -- Centocor methioninase -- AntiCancer MAb 3C5

FIG. 1R

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MAb C242-PE conjugate MAb 3F12 MAb c30-6 MAb 3F8 MAb CA208-cytorhodin-S conjugate ---MAb 42/6 MAb 425 -- Merck KGaA Hoechst Japan MAb 447-52D -- Merck Sharp & Dohme MAb CC49 -- Enzon MAb 45-2D9- – haematoporphyrin MAb ch14.18 – MAb CH14.18-GM-CSF fusion protein -conjugate MAb 4B4 Lexigen MAb 4E3-CPA conjugate -- BCM Oncologia MAb chCE7 MAb 4E3-daunorubicin conjugate MAb CI-137 -- AMRAD MAb cisplatin conjugate MAb 50-6 MAb CLB-CD19 MAb 50-61A – Institut Pasteur MAb CLB-CD19v MAb 5A8 -- Biogen MAb 791T/36-methotrexate conjugate MAb CLL-1 -- Peregrine MAb CLL-1-GM-CSF conjugate MAb 7c11.e8 MAb CLL-1-IL-2 conjugate -- Peregrine MAb 7E11 C5-selenocystamine conjugate MAb CLN lgG -- doxorubicin conjugates MAb 93KA9 -- Novartis MAb A5B7-cisplatin conjugate --MAb conjugates - Tanox Biodynamics Research, Pharmacia MAb D612 MAb Dal B02 MAb A5B7-I-131 MAb DC101 -- ImClone MAb A7 MAb EA 1 – MAb A717 -- Exocell MAb A7-zinostatin conjugate MAb EC708 - Biovation MAb EP-5C7 -- Protein Design Labs MAb ABX-RB2 -- Abgenix MAb ERIC-1 -- ICRT MAb ACA 11 MAb F105 gene therapy MAb AFP-I-131 – Immunomedics MAb FC 2.15 MAb AP1 MAb G250 -- Centocor MAb AZ1 MAb B3-LysPE40 conjugate MAb GA6 MAb GA733 MAb B4 – United Biomedical MAb B43 Genistein-conjugate MAb Gliomab-H --- Viventia Biotech MAb B43.13-Tc-99m -- Biomira MAb HB2-saporin conjugate MAb B43-PAP conjugate MAb HD 37 – MAb B4G7-gelonin conjugate MAb HD37-ricin chain-A conjugate MAb HNK20 -- Acambis MAb BCM 43-daunorubicin conjugate --MAb huN901-DM1 conjugate --BCM Oncologia ImmunoGen MAb BIS-1 MAb BMS 181170 -- Bristol-Myers Squibb MAb I-131 CC49 -- Corixa MAb ICO25 MAb BR55-2 MAb ICR12-CPG2 conjugate MAb BW494 MAb C 242-DM1 conjugate -- ImmunoGen MAb ICR-62

FIG. 1S

MAb R-24 MAb IRac-ricin A conjugate MAb R-24 α Human GD3 -- Celltech MAb K1 MAb KS1-4-methotrexate conjugate MAb RFB4-ricin chain A conjugate MAb RFT5-ricin chain A conjugate MAb L6 -- Bristol-Myers Squibb, Oncogen MAb SC 1 MAb LiCO 16-88 MAb LL2-I-131 - Immunomedics MAb SM-3 -- ICRT MAb SMART 1D10 -- Protein Design Labs MAb LL2-Y-90 MAb SMART ABL 364 -- Novartis MAb LS2D617 -- Hybritech MAb LYM-1-gelonin conjugate MAb SN6f MAb SN6f-deglycosylated ricin A chain MAb LYM-1-I-131 MAb LYM-1-Y-90 conjugate -MAb SN6i MAb LYM-2 -- Peregrine MAb SN7-ricin chain A conjugate MAb M195 MAb T101-Y-90 conjugate -- Hybritech MAb M195-bismuth 213 conjugate --MAb T-88 -- Chiron Protein Design Labs MAb M195-gelonin conjugate MAb TB94 -- Cancer ImmunoBiology MAb TEC 11 MAb M195-I-131 MAb TES-23 -- Chugai MAb M195-Y-90 MAb TM31 -- Avant MAb MA 33H1 -- Sanofi MAb TNT-1 -- Cambridge Antibody Tech., MAb MAD11 Peregrine MAb MGb2 MAb TNT-3 MAb MINT5 MAb TNT-3 -- IL2 fusion protein -.MAb MK2-23 MAb MOC31 ETA(252-613) conjugate MAb TP3-At-211 MAb TP3-PAP conjugate --MAb MOC-31-In-111 MAb UJ13A -- ICRT MAb MOC-31-PE conjugate MAb UN3 MAb MR6 – MAb ZME-018-gelonin conjugate MAb MRK-16 -- Aventis Pasteur MAb-BC2 -- GlaxoSmithKline MAb MS11G6 MAb-DM1 conjugate -- ImmunoGen MAb MX-DTPA BrE-3 MAb-ricin-chain-A conjugate -- XOMA MAb MY9 MAb-temoporfin conjugates MAb Nd2 -- Tosoh Monopharm C -- Viventia Biotech MAb NG-1 -- Hygeia monteplase -- Eisai MAb NM01 – Nissin Food montirelin hydrate -- Gruenenthal MAb OC 125 moroctocog alfa -- Genetics Institute MAb OC 125-CMA conjugate Moroctocog-alfa -- Pharmacia MAb OKI-1 -- Ortho-McNeil MP 4 MAb OX52 -- Bioproducts for Science MP-121 -- Biopharm MAb PMA5 MP-52 -- Biopharm MAb PR1 MRA -- Chugai MAb prost 30 FIG. 1T

Neuroprotective vaccine -- University of MS 28168 -- Mitsui Chemicals, Nihon Auckland Schering MSH fusion toxin -- Ligand neurotrophic chimaeras -- Regeneron neurotrophic factor - NsGene, CereMedix MSI-99 -- Genaera NeuroVax -- Immune Response MT 201 -- Micromet neurturin -- Genentech Muc-1 vaccine -- Corixa neutral endopeptidase -- Genentech mucosal tolerance - Aberdeen NGF enhancers -- NeuroSearch mullerian inhibiting subst muplestim -- Genetics Institute, Novartis, NHL vaccine -- Large Scale Biology NIP45 -- Boston Life Sciences **DSM Anti-Infectives** NKI-B20 murine MAb - KS Biomedix Mutant somatropin -- JCR Pharmaceutical NM 01 - Nissin Food NMI-139 -- NitroMed MV 833 -- Toagosei NMMP -- Genetics Institute Mycoplasma pulmonis vaccine NN-2211 -- Novo Nordisk Mycoprex -- XOMA Noggin -- Regeneron myeloperoxidase -- Henogen myostatin -- Genetics Institute Nonacog alfa Norelin -- Biostar Nacolomab tafenatox -- Pharmacia nagrestipen - British Biotech Norwalk virus vaccine NRLU 10 -- NeoRx NAP-5 - Corvas Intl. NRLU 10 PE -- NeoRx NAPc2 - Corvas Intl. NT-3 -- Regeneron nartograstim -- Kyowa Natalizumab -- Protein Design Labs NT-4/5 -- Genentech NU 3056 Nateplase - NIH, Nihon Schering NU 3076 nateplase -- Schering AG NX 1838 -- Gilead Sciences NBI-3001 - Neurocrine Biosci. NY ESO-1/CAG-3 antigen -- NIH NBI-5788 -- Neurocrine Biosci. NYVAC-7 -- Aventis Pasteur NBI-6024 -- Neurocrine Biosci. NZ-1002 -- Novazyme Nef inhibitors -- BRI Neisseria gonorrhoea vaccine -- Antex obesity therapy -- Nobex OC 10426 -- Ontogen Biologics OC 144093 -- Ontogen Neomycin B-arginine conjugate Nerelimomab -- Chiron OCIF -- Sankyo Oct-43 -- Otsuka Nerve growth factor – Amgen – Chiron, OK PSA - liposomal Genentech OKT3-gamma-1-ala-ala Nerve growth factor gene therapy OM 991 nesiritide citrate -- Scios OM 992 neuregulin-2 -- CeNeS Omalizumab -- Genentech neurocan -- NYU neuronal delivery system -- CAMR oncoimmunin-L -- NIH Oncolysin B -- ImmunoGen

FIG. 1U

PAM 4 -- Merck Oncolysin CD6 -- ImmunoGen pamiteplase -- Yamanouchi Oncolysin M -- ImmunoGen pancreatin, Minitabs -- Eurand Oncolysin S -- ImmunoGen Pangen -- Fournier Oncophage -- Antigenics Pantarin - Selective Genetics Oncostatin M -- Bristol-Myers Squibb Parainfluenza virus vaccine – Pharmacia, OncoVax-CL -- Jenner Biotherapies Pierre Fabre OncoVax-P -- Jenner Biotherapies onercept -- Yeda paraoxanase -- Esperion parathyroid hormone - Abiogen, Korea onychomycosis vaccine -- Boehringer Green Cross Ingelheim Parathyroid hormone (1-34) -opebecan -- XOMA Chugai/Suntory opioids -- Arizona Parkinson's disease gene therapy -- Cell Opreivekin -- Genetics Institute Genesys/ Ceregene Org-33408 b-- Akzo Nobel Parvovirus vaccine -- MedImmune Orolip DP -- EpiCept PCP-Scan - Immunomedics oryzacystatin OSA peptides – GenSci Regeneration PDGF cocktail -- Theratechnologies peanut allergy therapy -- Dynavax osteoblast-cadherin GF -- Pharis Osteocalcin-thymidine kinase gene therapy PEG anti-ICAM MAb -- Boehringer Ingelheim osteogenic protein -- Curis osteopontin - OraPharma PEG asparaginase -- Enzon PEG glucocerebrosidase osteoporosis peptides - Integra, Telios osteoprotegerin - Amgen, SnowBrand PEG hirudin – Knoll otitis media vaccines -- Antex Biologics PEG interferon-alpha-2a -- Roche PEG interferon-alpha-2b + ribavirin ovarian cancer -- University of Alabama OX40-IgG fusion protein -- Cantab, Xenova Biogen, Enzon, ICN Pharmaceuticals, Schering-Plough P 246 -- Diatide PEG MAb A5B7 -P 30 -- Alfacell Pegacaristim – Amgen -- Kirin Brewery -p1025 -- Active Biotech P-113[^] -- Demegen ZymoGenetics P-16 peptide -- Transition Therapeutics Pegaldesleukin -- Research Corp pegaspargase -- Enzon p43 -- Ramot pegfilgrastim -- Amgen P-50 peptide -- Transition Therapeutics PEG-interferon Alpha -- Viragen p53 + RAS vaccine -- NIH, NC! PEG-interferon Alpha 2A -- Hoffman La-PACAP(1-27) analogue Roche paediatric vaccines -- Chiron PEG-interferon Alpha 2B -- Schering-Pafase -- ICOS PAGE-4 plasmid DNA -- IDEC Plough PEG-r-hirudin -- Abbott PAI-2 -- Biotech Australia, Human PEG-uricase -- Mountain View Therapeutics Pegvisomant – Genentech Palivizumab -- Medimmune

FIG. 1V

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PEGylated proteins, PolyMASC -- Valentis Pharmaprojects No. 5947 -- StressGen PEGylated recombinant native human leptin Pharmaprojects No. 5961 -Theratechnologies -- Roche Pharmaprojects No. 5962 -- NIH Pemtumomab Pharmaprojects No. 5966 -- NIH Penetratin -- Cyclacel Pharmaprojects No. 5994 -- Pharming Pepscan - Antisoma Pharmaprojects No. 5995 -- Pharming peptide G - Peptech, ICRT Pharmaprojects No. 6023 -- IMMUCON peptide vaccine -- NIH ,NCl Pharmaprojects No. 6063 -- Cytoclonal Pexelizumab Pharmaprojects No. 6073 -- SIDDCO pexiganan acetate -- Genaera Pharmaprojects No. 6115 -- Genzyme Pharmaprojects No. 3179 -- NYU Pharmaprojects No. 3390 -- Ernest Orlando Pharmaprojects No. 6227 -- NIH Pharmaprojects No. 3417 -- Sumitomo Pharmaprojects No. 6230 -- NIH Pharmaprojects No. 3777 -- Acambis Pharmaprojects No. 6236 -- NIH Pharmaprojects No. 4209 -- XOMA Pharmaprojects No. 6243 -- NIH Pharmaprojects No. 4349 – Baxter Intl. Pharmaprojects No. 6244 -- NIH Pharmaprojects No. 6281 -- Senetek Pharmaprojects No. 4651 Pharmaprojects No. 4915 -- Avanir Pharmaprojects No. 6365 -- NIH Pharmaprojects No. 5156 -- Rhizogenics Pharmaprojects No. 6368 -- NIH Pharmaprojects No. 6373 -- NIH Pharmaprojects No. 5200 -- Pfizer Pharmaprojects No. 6408 - Pan Pacific Pharmaprojects No. 5215 -- Origene Pharmaprojects No. 6410 -- Athersys Pharmaprojects No. 5216 -- Origene Pharmaprojects No. 6421 – Oxford Pharmaprojects No. 5218 -- Origene Pharmaprojects No. 5267 -- ML **GlycoSciences** Pharmaprojects No. 6522 -- Maxygen Laboratories Pharmaprojects No. 6523 -- Pharis Pharmaprojects No. 5373 -- MorphoSys Pharmaprojects No. 5493 -- Metabolex Pharmaprojects No. 6538 -- Maxygen Pharmaprojects No. 6554 -- APALEXO Pharmaprojects No. 5707 -- Genentech Pharmaprojects No. 6560 -- Ardana Pharmaprojects No. 5728 -- Autogen Pharmaprojects No. 5733 -- BioMarin Pharmaprojects No. 6562 -- Bayer Pharmaprojects No. 5757 -- NIH Pharmaprojects No. 6569 -- Eos Phenoxazine Pharmaprojects No. 5765 - Gryphon Pharmaprojects No. 5830 -- AntiCancer Phenylase -- Ibex Pharmaprojects No. 5839 -- Dyax Pigment epithelium derived factor plasminogen activator inhibitor-1, Pharmaprojects No. 5849 -- Johnson & recombinant -- DuPont Pharmaceuticals Johnson Pharmaprojects No. 5860 -- Mitsubishi-Tokyo Pharmaprojects No. 5869 - Oxford

GlycoSciences |

Pharmaprojects No. 5883 -- Asahi Brewery

FIG. 1W

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prostate-specific antigen -- EntreMed Plasminogen activators -- Abbott Laboratories, American Home Products, protein A -- RepliGen Boehringer Mannheim, Chiron protein adhesives -- Enzon Corporation, DuPont Pharmaceuticals, Eli protein C - Baxter Intl., PPL Therapeutics, ZymoGenetics Lilly, Shionogi, Genentech, Genetics protein C activator - Gilead Sciences Institute, GlaxoSmithKline, Hemispherx Biopharma, Merck & Co, Novartis, protein kinase R antags -- NIH Pharmacia Corporation, Wakamoto, Yeda protirelin -- Takeda plasminogen-related peptides -- Bio-Tech. protocadherin 2 -- Caprion Pro-urokinase - Abbott, Bristol-Myers General/MGH Squibb, Dainippon, Tosoh -- Welfide platelet factor 4 -- RepliGen P-selectin glycoprotein ligand-1 -- Genetics Platelet-derived growth factor - Amgen --Institute **ZymoGenetics** pseudomonal infections -- InterMune plusonermin-- Hayashibara Pseudomonas vaccine -- Cytovax PMD-2850 -- Protherics PSGL-Ig -- American Home Products Pneumococcal vaccine -- Antex Biologics, PSP-94 -- Procyon Aventis Pasteur Pneumococcal vaccine intranasal --PTH 1-34 -- Nobex Quilimmune-M -- Antigenics BioChem Vaccines/Biovector R 101933 PR1A3 R 125224 -- Sankyo PR-39 RA therapy -- Cardion pralmorelin -- Kaken Rabies vaccine recombinant -- Aventis Pretarget-Lymphoma -- NeoRx Pasteur, BioChem Vaccines, Kaketsuken Priliximab -- Centocor **Pharmaceuticals** PRO 140 -- Progenics RadioTheraCIM -- YM BioSciences PRO 2000 -- Procept Ramot project No. 1315 -- Ramot PRO 367 -- Progenics Ramot project No. K-734A -- Ramot PRO 542 -- Progenics Ramot project No. K-734B -- Ramot pro-Apo A-1 -- Esperion RANK -- Immunex prolactin -- Genzyme Prosaptide TX14(A) -- Bio-Tech. General ranpirnase -- Alfacell ranpirnase-anti-CD22 MAb -- Alfacell prostate cancer antbodies – Immunex, RANTES inhibitor -- Milan UroCor RAPID drug delivery systems -- ARIAD prostate cancer antibody therapy -rasburicase -- Sanofi Genentech/UroGenesys, rBPI-21, topical -- XOMA Genotherapeutics prostate cancer immunotherapeutics -- The RC 529 -- Corixa rCFTR -- Genzyme Transgenics PSMA Development Company prostate cancer vaccine -- Aventis Pasteur, RD 62198 rDnase -- Genentech Zonagen, Corixa, Dendreon, Jenner RDP-58 -- SangStat Biotherapies, Therion Biologics

FIG. 1X

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Ribozyme gene therapy -- Genset RecepTox-Fce -- Keryx Rickettsial vaccine recombinant RecepTox-GnRH - Keryx, MTR RIGScan CR -- Neoprobe **Technologies** RIP-3 -- Rigel RecepTox-MBP – Keryx, MTR RK-0202 -- RxKinetix Technologies RLT peptide -- Esperion recFSH -- Akzo Nobel, Organon rM/NEI -- IVAX REGA 3G12 rmCRP -- Immtech Regavirumab -- Teijin RN-1001 -- Renovo relaxin -- Connetics, Corp RN-3 -- Renovo Renal cancer vaccine -- Macropharm RNAse conjugate -- Immunomedics repifermin -- Human Genome Sciences Respiratory syncytial virus PFP-2 vaccine -- RO 631908 -- Roche Rotavirus vaccine -- Merck Wyeth-Lederle Respiratory syncytial virus vaccine -RP 431 -- DuPont Pharmaceuticals GlaxoSmithKline, Pharmacia, Pierre Fabre RP-128 -- Resolution Respiratory syncytial virus vaccine RPE65 gene therapy – RPR 110173 -- Aventis Pasteur inactivated RPR 115135 -- Aventis Pasteur Respiratory syncytial virus-parainfluenza RPR 116258A -- Aventis Pasteur virus vaccine -- Aventis Pasteur, rPSGL-Ig -- American Home Products Pharmacia r-SPC surfactant -- Byk Gulden Reteplase -- Boehringer Mannheim, rV-HER-2/neu -- Therion Biologics Hoffman La-Roche SA 1042 -- Sankyo Retropep -- Retroscreen sacrosidase - Orphan Medical RFB4 (dsFv) PE38 Sant 7 RFI 641 -- American Home Products Sargramostim -- Immunex RFTS -- UAB Research Foundation RG 12986 -- Aventis Pasteur saruplase -- Gruenenthal Satumomab -- Cytogen RG 83852 -- Aventis Pasteur SB 1 -- COR Therapeutics RG-1059 -- RepliGen SB 207448 -- GlaxoSmithKline rGCR -- NIH SB 208651 -- GlaxoSmithKline rGLP-1 -- Restoragen SB 240683 -- GlaxoSmithKline rGRF -- Restoragen SB 249415 -- GlaxoSmithKline rh Insulin – Eli Lilly RHAMM targeting peptides -- Cangene SB 249417 -- GlaxoSmithKline rHb1.1 - Baxter Intl. SB 6 -- COR Therapeutics SB RA 31012 rhCC10 -- Claragen SC 56929 -- Pharmacia rhCG -- Serono SCA binding proteins - Curis, Enzon Rheumatoid arthritis gene therapy scFv(14E1)-ETA Berlex Laboratories, Rheumatoid arthritis vaccine -- Veterans Schering AG Affairs Medical Center ScFv(FRP5)-ETA rhLH -- Serono

FIG. 1Y

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somatomedin-1 - GroPep, Mitsubishi-ScFv6C6-PE40 -SCH 55700 -- Celltech Tokyo, NIH somatomedin-1 carrier protein -- Insmed Schistosomiasis vaccine -- Glaxo somatostatin -- Ferring Wellcome/Medeva, Brazil SCPF -- Advanced Tissue Sciences Somatotropin/ Human Growth Hormone -- Bio-Tech. scuPA-suPAR complex -- Hadasit General, Eli Lilly SD-9427 -- Pharmacia somatropin -- Bio-Tech. General, Alkermes, SDF-1 -- Ono ProLease, Aventis Behring, Biovector, SDZ 215918 -- Novartis Cangene, Dong-A, Eli Lilly, Emisphere, SDZ 280125 -- Novartis Enact, Genentech, Genzyme Transgenics, SDZ 89104 -- Novartis Grandis/InfiMed, CSL, InfiMed, MacroMed, SDZ ABL 364 -- Novartis Novartis, Novo Nordisk, Pharmacia SDZ MMA 383 -- Novartis serine protease inhibs -- Pharis Serono, TranXenoGen somatropin derivative -- Schering AG sermorelin acetate -- Serono somatropin, AIR -- Eli Lilly SERP-1 -- Viron Somatropin, inhaled -- Eli Lilly/Alkermes sertenef -- Dainippon somatropin, Kabi -- Pharmacia serum albumin, Recombinant human -somatropin, Orasome -- Novo Nordisk Aventis Behring serum-derived factor -- Hadasit Sonermin -- Dainippon Pharmaceutical SP(V5.2)C -- Supertek Sevirumab -- Novartis SPf66 SGN 14 -- Seatle Genetics sphingomyelinase -- Genzyme SGN 15 -- Seatle Genetics SR 29001 -- Sanofi SGN 17/19 -- Seatle Genetics SR 41476 -- Sanofi SGN 30 -- Seatle Genetics SGN-10 -- Seatle Genetics SR-29001 -- Sanofi SS1(dsFV)-PE38 -- NeoPharm SGN-11 -- Seatle Genetics ß2 microglobulin -- Avidex SH 306 -- DuPont Pharmaceuticals ß2-microglobulin fusion proteins -- NIH Shanvac-B -- Shantha Shigella flexneri vaccine -- Avant, Acambis, ß-amyloid peptides -- CeNeS ß-defensin -- Pharis Novavax Staphylococcus aureus infections --Shigella sonnei vaccine – Inhibitex/ZLB sICAM-1 -- Boehringer Ingelheim Staphylococcus aureus vaccine conjugate --Silteplase -- Genzyme SIV vaccine -- Endocon, Institut Pasteur Nabi SK 896 -- Sanwa Kagaku Kenkyusho Staphylococcus therapy -- Tripep SK-827 -- Sanwa Kagaku Kenkyusho Staphylokinase – Biovation, Prothera, Skeletex -- CellFactors Thrombogenetics Streptococcal A vaccine -- M6 SKF 106160 -- GlaxoSmithKline Pharmaceuticals, North American Vaccine S-nitroso-AR545C --Streptococcal B vaccine -- Microscience SNTP -- Active Biotech

FIG. 1Z

TFPI -- EntreMed Streptococcal B vaccine recombinant -tgD-IL-2 -- Takeda Biochem Vaccines TGF-Alpha -- ZymoGenetics Streptococcus pyogenes vaccine TGF-ß -- Kolon STRL-33 -- NIH TGF-ß2 -- Insmed Subalin -- SRC VB VECTOR TGF-ß3 -- OSI SUIS -- United Biomedical Thalassaemia gene therapy -- Crucell SUIS-LHRH -- United Biomedical TheraCIM-h-R3 -- Center of Molecular SUN-E3001 -- Suntory Immunology, YM BioSciences super high affinity monoclonal antibodies --YM BioSciences Theradigm-HBV -- Epimmune Theradigm-HPV -- Epimmune Superoxide dismutase - Chiron, Enzon, Theradigm-malaria -- Epimmune Ube Industries, Bio-Tech, Yeda Theradigm-melanoma -- Epimmune superoxide dismutase-2 -- OXIS suppressin -- UAB Research Foundation TheraFab – Antisoma ThGRF 1-29 -- Theratechnologies SY-161-P5 -- ThromboGenics ThGRF 1-44 -- Theratechnologies SY-162 -- ThromboGenics thrombomodulin – Iowa, Novocastra Systemic lupus erythematosus vaccine --Thrombopoietin -- Dragon Pharmaceuticals, MedClone/VivoRx Genentech T cell receptor peptide vaccine thrombopoietin, Pliva --- Receptron T4N5 liposomes -- AGI Dermatics Thrombospondin 2 – TACI, soluble -- ZymoGenetics thrombostatin -- Thromgen targeted apoptosis -- Antisoma thymalfasin -- SciClone tasonermin -- Boehringer Ingelheim thymocartin - Gedeon Richter TASP thymosin Alpha1 -- NIH TASP-V thyroid stimulating hormone -- Genzyme Tat peptide analogues -- NIH tlCAM-1 -- Bayer TBP I -- Yeda Tick anticoagulant peptide -- Merck TBP || TIF -- Xoma TBV25H -- NIH Tc 99m ior cea1 -- Center of Molecular Tifacogin – Chiron, NIS, Pharmacia Tissue factor -- Genentech Immunology Tissue factor pathway inhibitor Tc 99m P 748 -- Diatide TJN-135 -- Tsumura Tc 99m votumumab -- Intracell Tc-99m rh-Annexin V - Theseus Imaging TM 27 -- Avant TM 29 -- Avant teceleukin -- Biogen TMC-151 – Tanabe Seiyaku tenecteplase -- Genentech TNF tumour necrosis factor -- Asahi Kasei Teriparatide -- Armour Pharmaceuticals, TNF Alpha -- Cytlmmune Asahi Kasei, Eli Lilly TNF antibody -- Johnson & Johnson terlipressin -- Ferring TNF binding protein -- Amgen testisin -- AMRAD TNF degradation product -- Oncotech Tetrafibricin -- Roche FIG. 1AA

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TNF receptor -- Immunex TNF receptor 1, soluble -- Amgen TNF Tumour necrosis factor-alpha -- Asahi Type I diabetes vaccine -- Research Corp Kasei, Genetech, Mochida TNF-Alpha inhibitor -- Tripep TNFR:Fc gene therapy - Targeted Genetics U 81749 -- Pharmacia TNF-SAM2 ToleriMab -- Innogenetics Toxoplasma gondii vaccine ---GlaxoSmithKline TP 9201 -- Telios TP10 -- Avant TP20 -- Avant tPA --- Centocor trafermin -- Scios TRAIL/Apo2L -- Immunex transferrin-binding proteins -- CAMR Transforming growth factor-beta-1 --Genentech transport protein -- Genesis TRH -- Ferring Triabin -- Schering AG Triconal Triflavin troponin I -- Boston Life Sciences TRP-2^ -- NIH trypsin inhibitor -- Mochida TSP-1 gene therapy --TT-232 TTS-CD2 -- Active Biotech Tuberculosis vaccine -- Aventis Pasteur, Genesis Tumor Targeted Superantigens -- Active Biotech -- Pharmacia tumour vaccines -- PhotoCure tumour-activated prodrug antibody conjugates -- Millennium/ImmunoGen tumstatin -- ILEX WP 652 Tuvirumab -- Novartis WT1 vaccine -- Corixa TV-4710 - Teva

TWEAK receptor -- Immunex

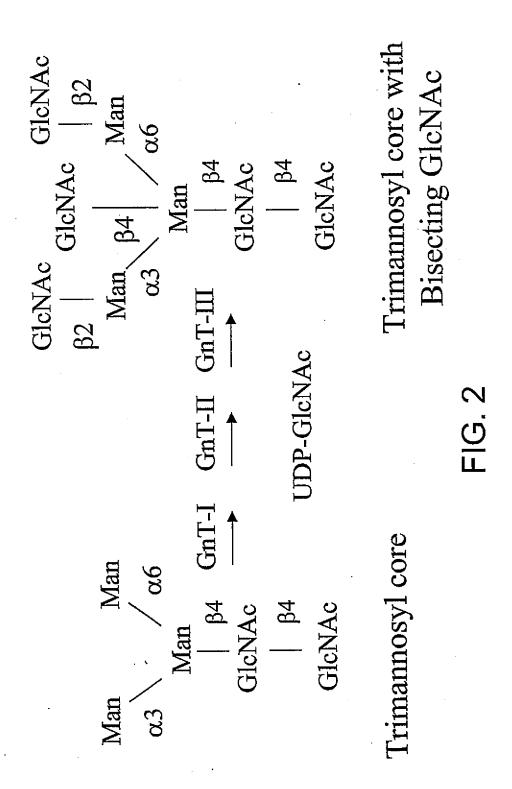
TXU-PAP TY-10721 - TOA Eiyo Typhoid vaccine CVD 908 U 143677 -- Pharmacia UA 1248 -- Arizona UGIF -- Sheffield UIC 2 UK 101 UK-279276 - Corvas Intl. urodilatin -- Pharis urofollitrophin -- Serono uteroferrin-- Pepgen V 20 -- GLYCODesign V2 vasopressin receptor gene therapy vaccines -- Active Biotech Varicella zoster glycoprotein vaccine --Research Corporation Technologies Varicella zoster virus vaccine live -- Cantab **Pharmaceuticals** Vascular endothelial growth factor – Genentech, University of California Vascular endothelial growth factors – R&D Systems vascular targeting agents -- Peregrine vasopermeation enhancement agents --Peregrine vasostatin -- NIH VCL -- Bio-Tech, General VEGF - Genentech, Scios VEGF inhibitor -- Chugai VEGF-2 -- Human Genome Sciences VEGF-Trap --- Regeneron viscumin, recombinant -- Madaus Vitaxin Vitrase -- ISTA Pharmaceuticals West Nile virus vaccine -- Bavarian Nordic

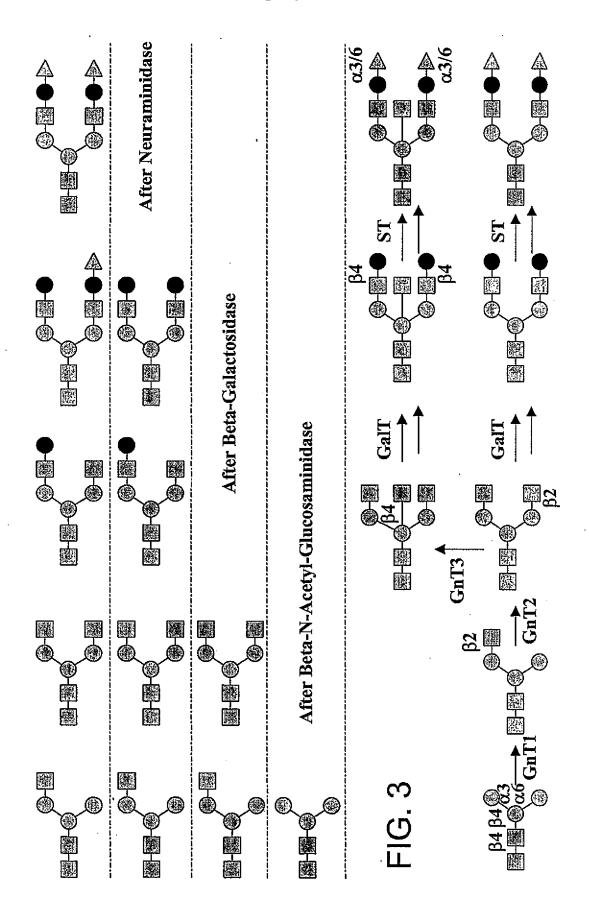
WX-293 -- Wilex BioTech. FIG. 1BB

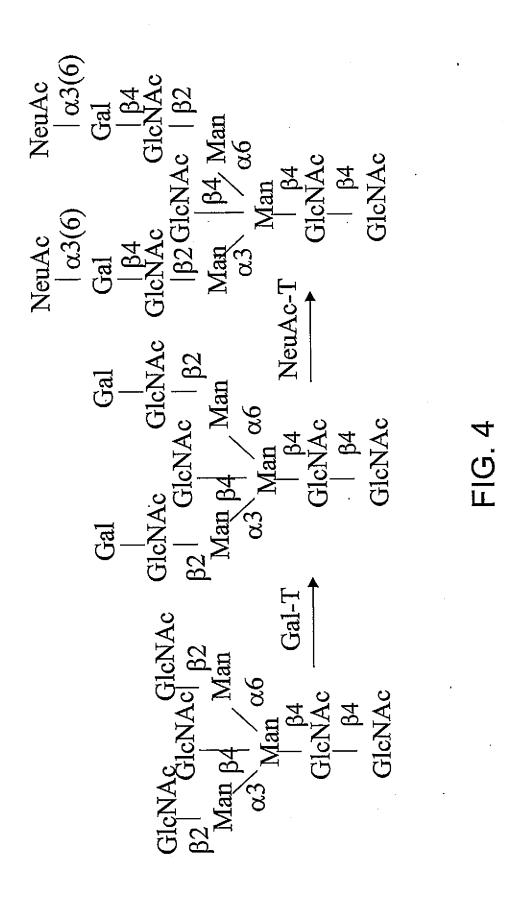
29/345

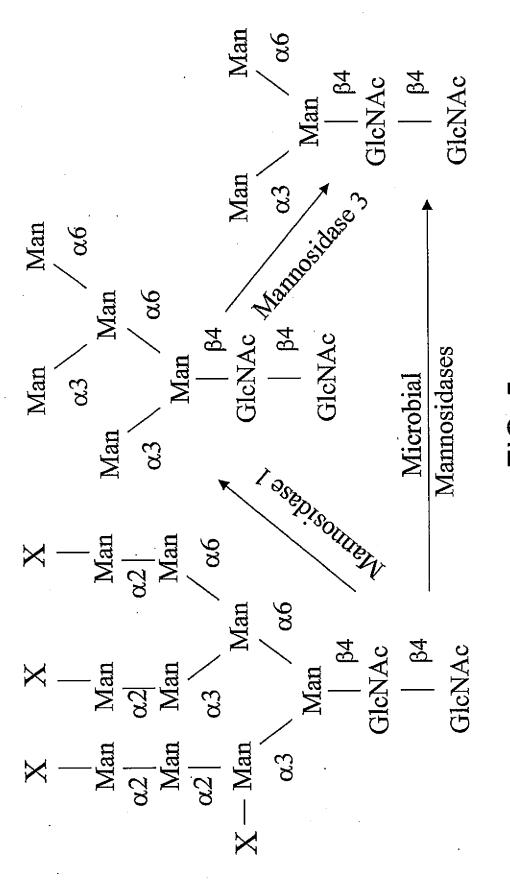
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WX-UK1 -- Wilex BioTech.
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XomaZyme-791 -- XOMA
XTL 001 -- XTL Biopharmaceuticals
XTL 002 -- XTL Biopharmaceuticals
yeast delivery system -- Globelmmune
Yersinia pestis vaccine
YIGSR-Stealth -- Johnson & Johnson
Yissum Project No. D-0460 -- Yissum

YM 207 -- Yamanouchi
YM 337 -- Protein Design Labs
Yttrium-90 labelled biotin
Yttrium-90-labeled anti-CEA MAb T84.66 -ZD 0490 -- AstraZeneca
ziconotide -- Elan
ZK 157138 -- Berlex Laboratories
Zolimomab aritox
Zorcell -- Immune Response
ZRXL peptides -- Novartis

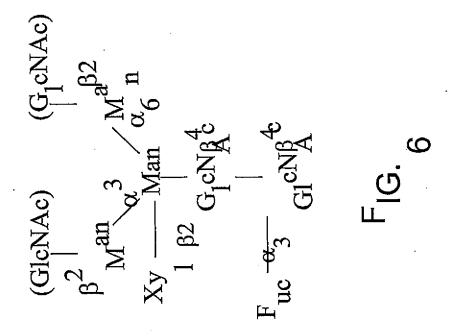




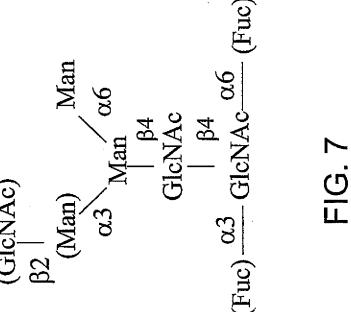


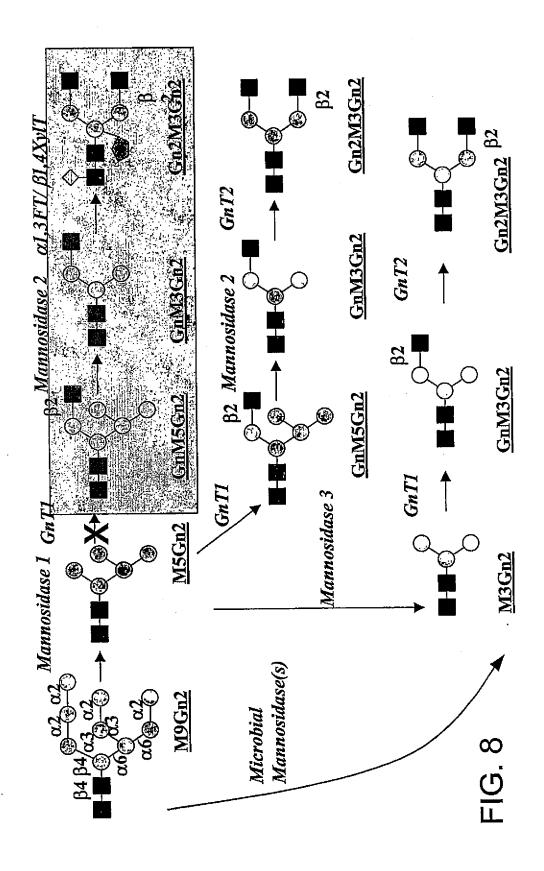


-16.5

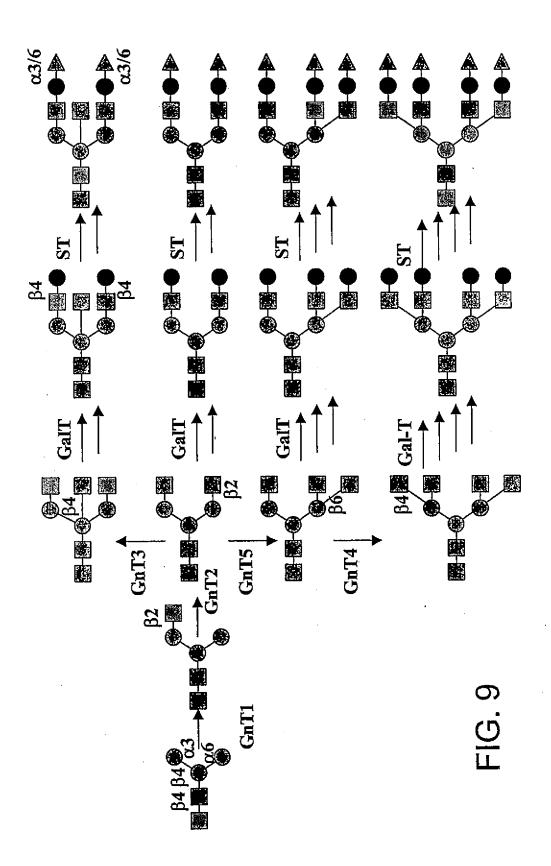


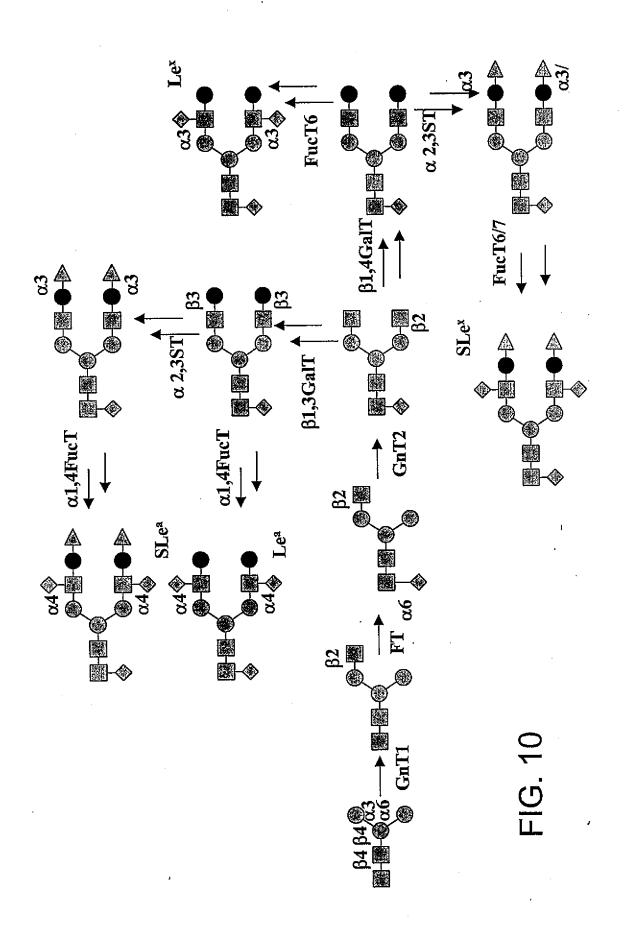
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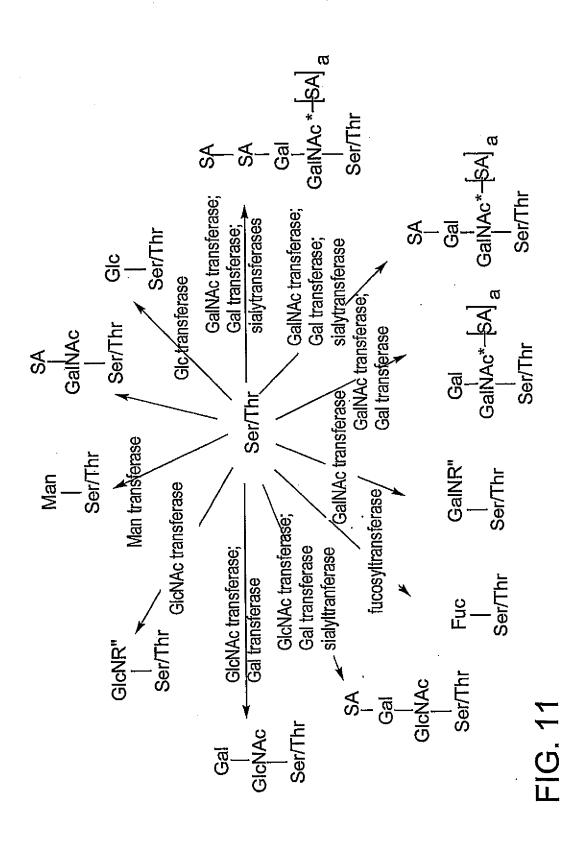




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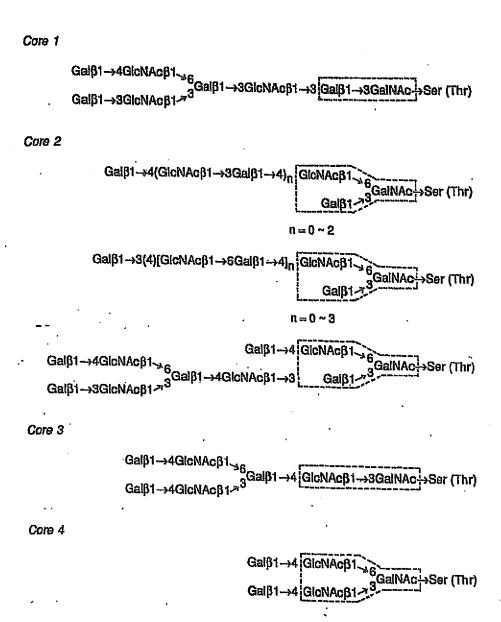
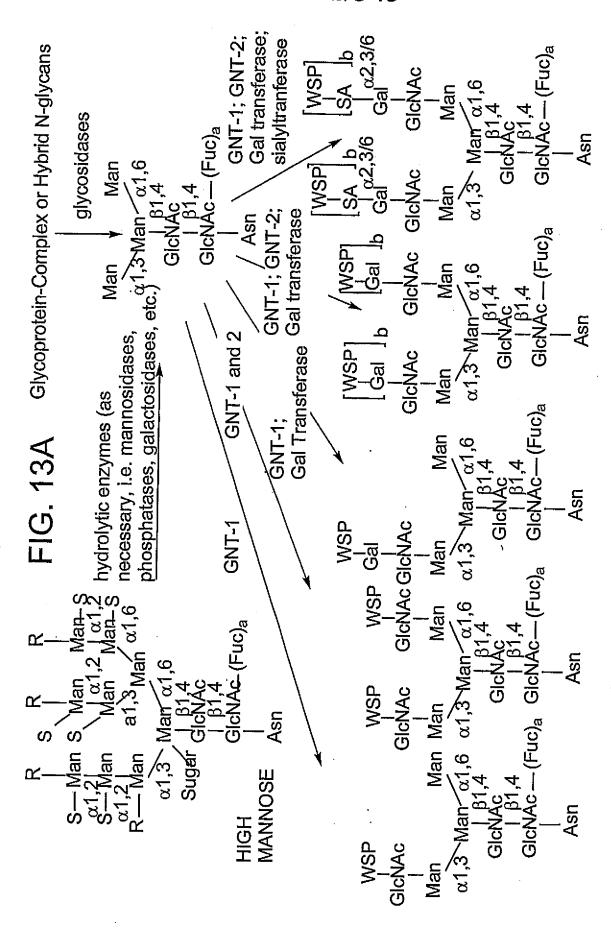
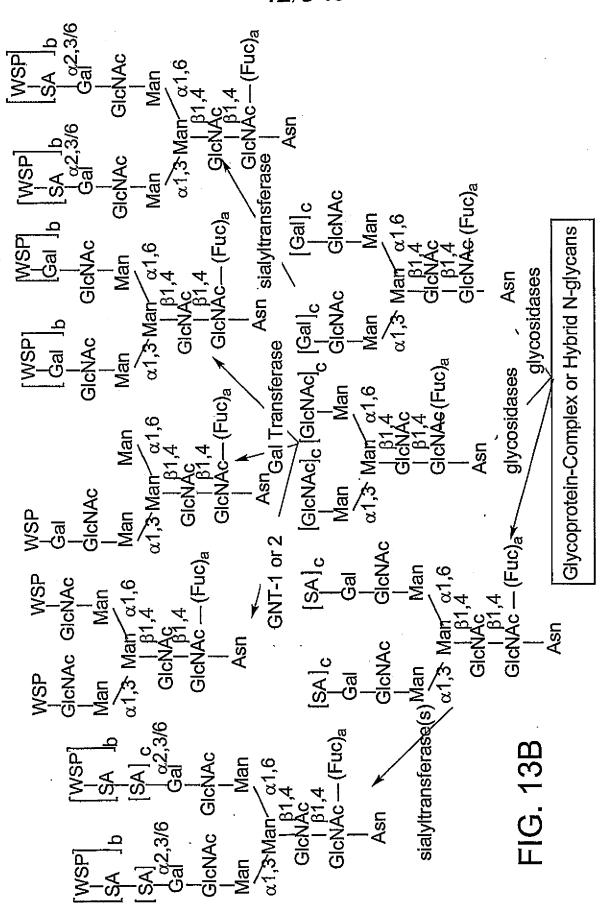


FIG. 12





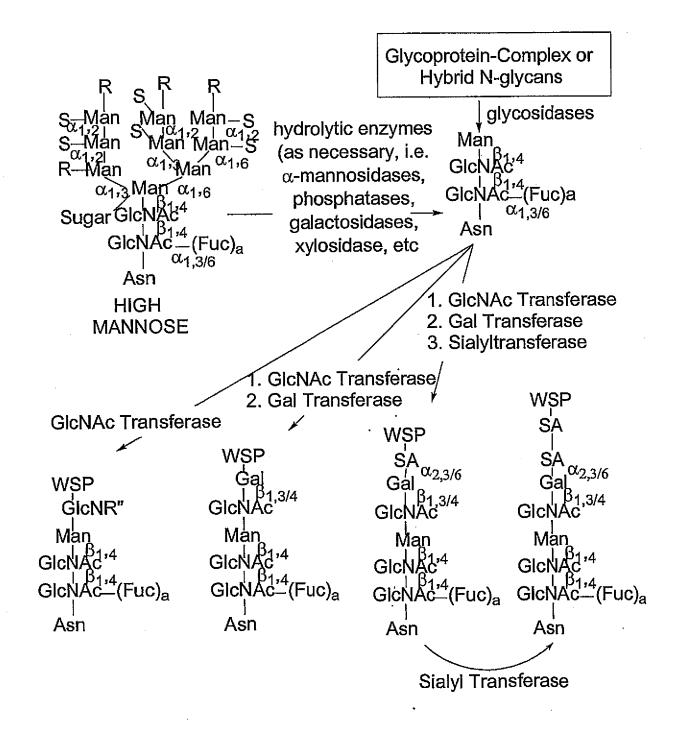


FIG. 14

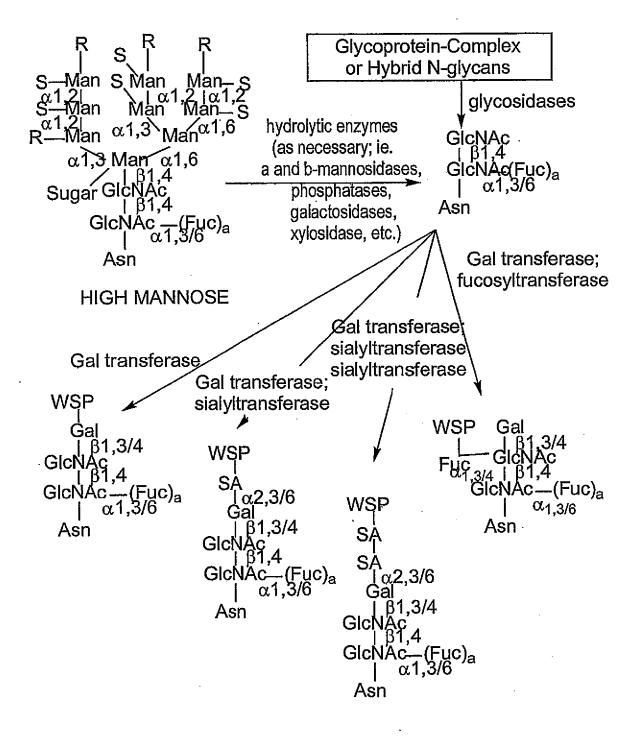


FIG. 15

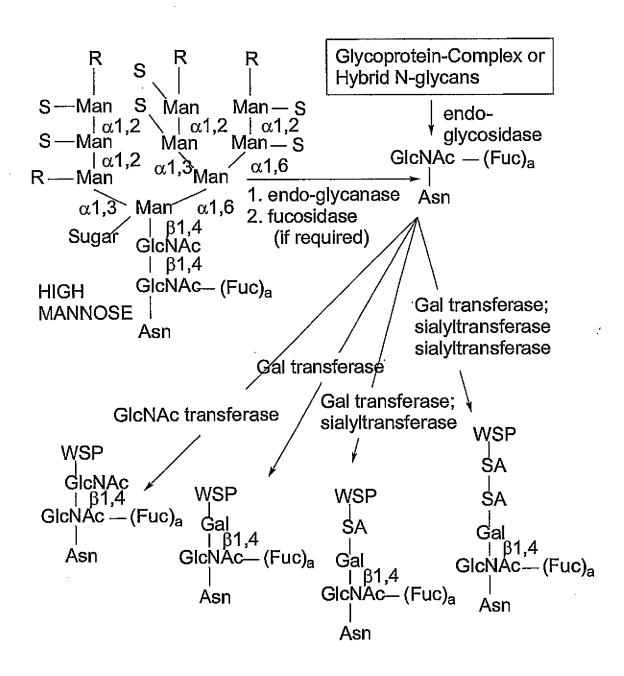
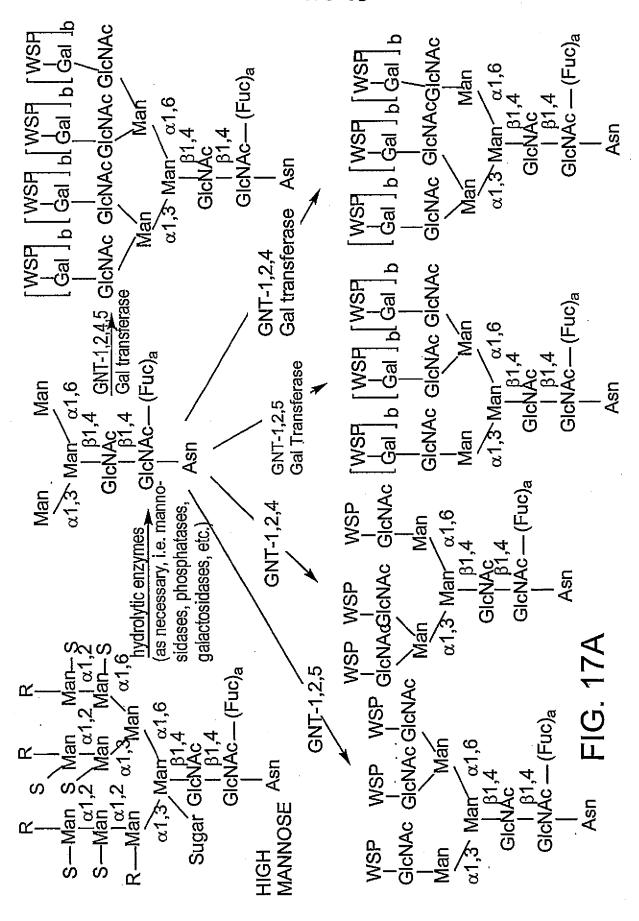
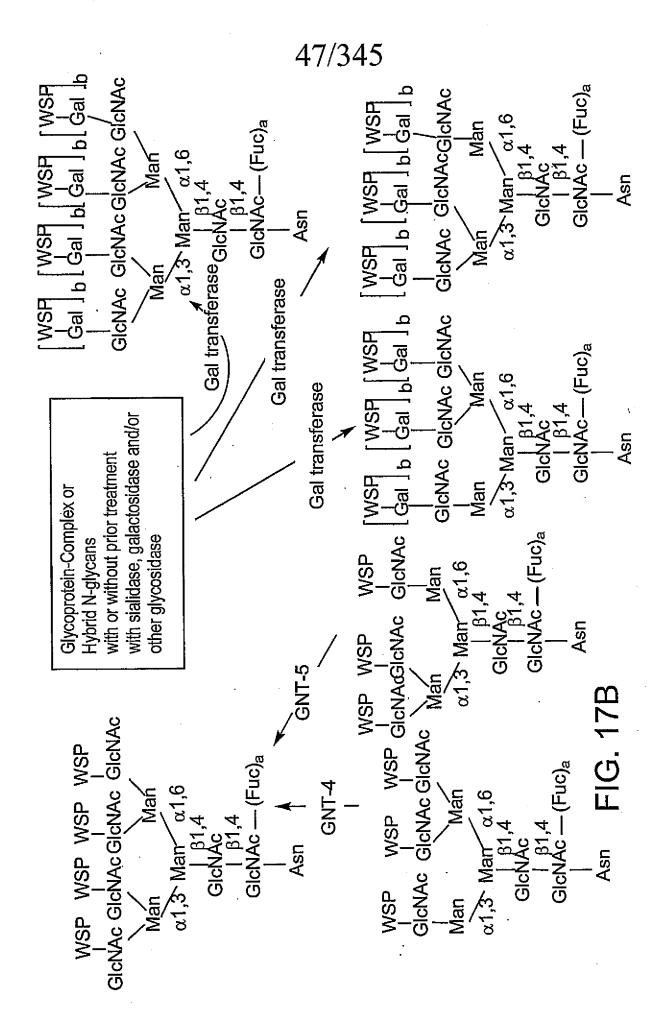
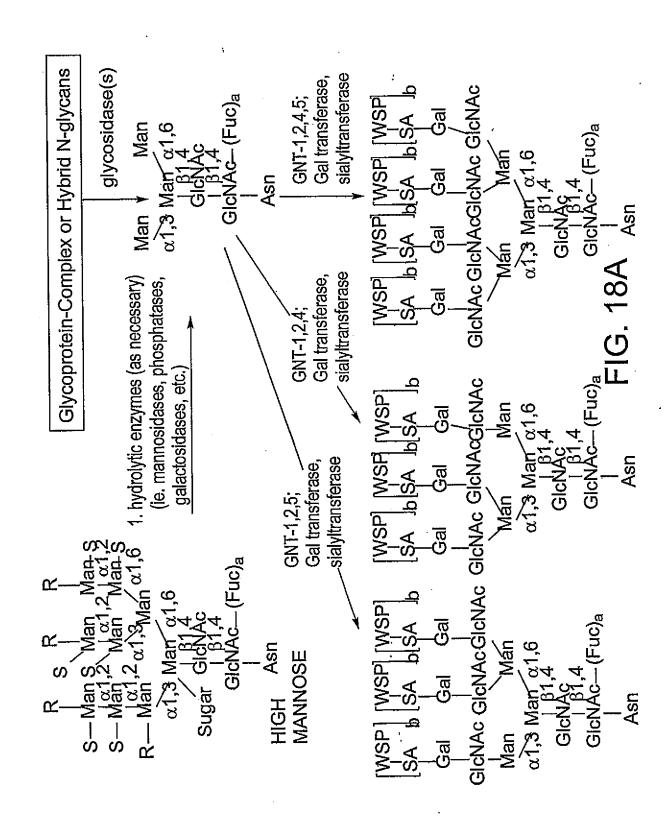


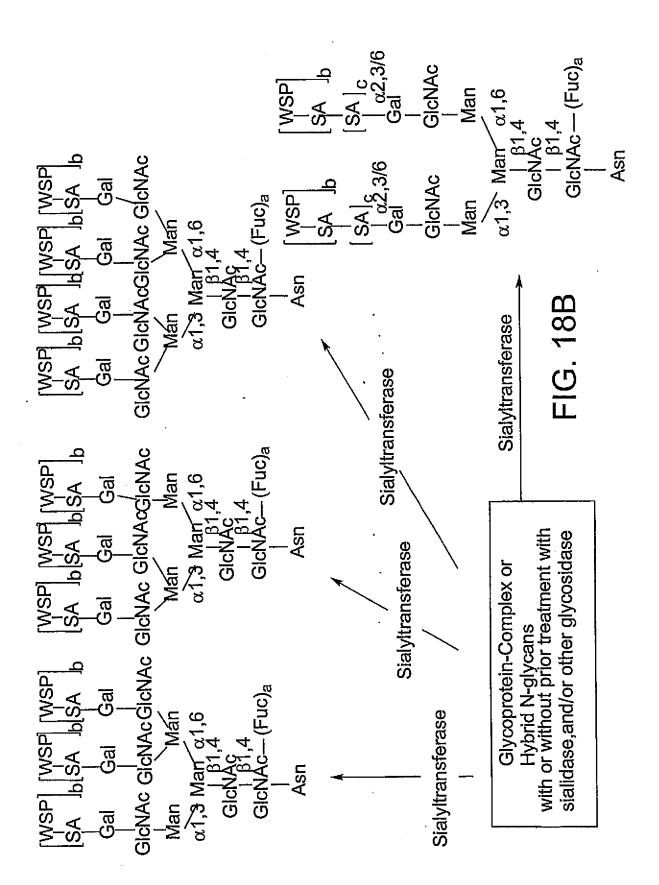
FIG. 16



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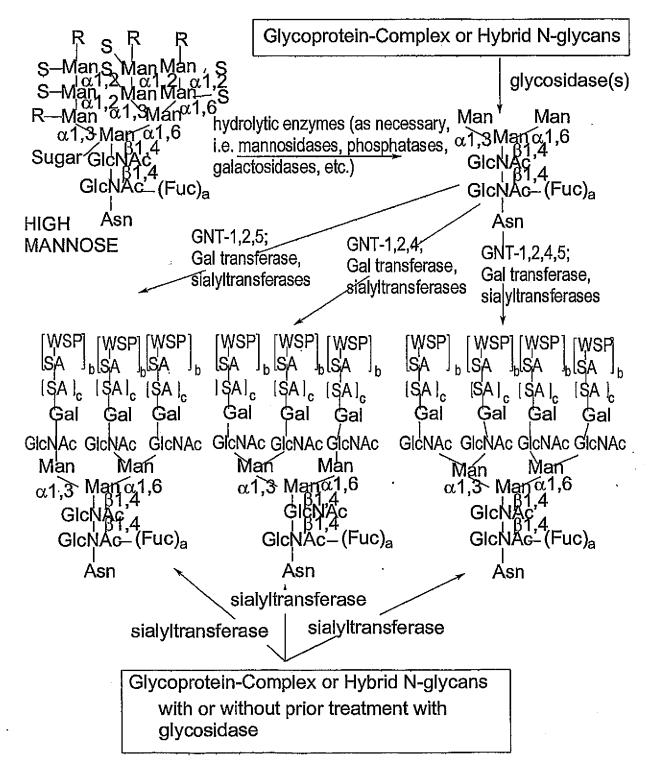
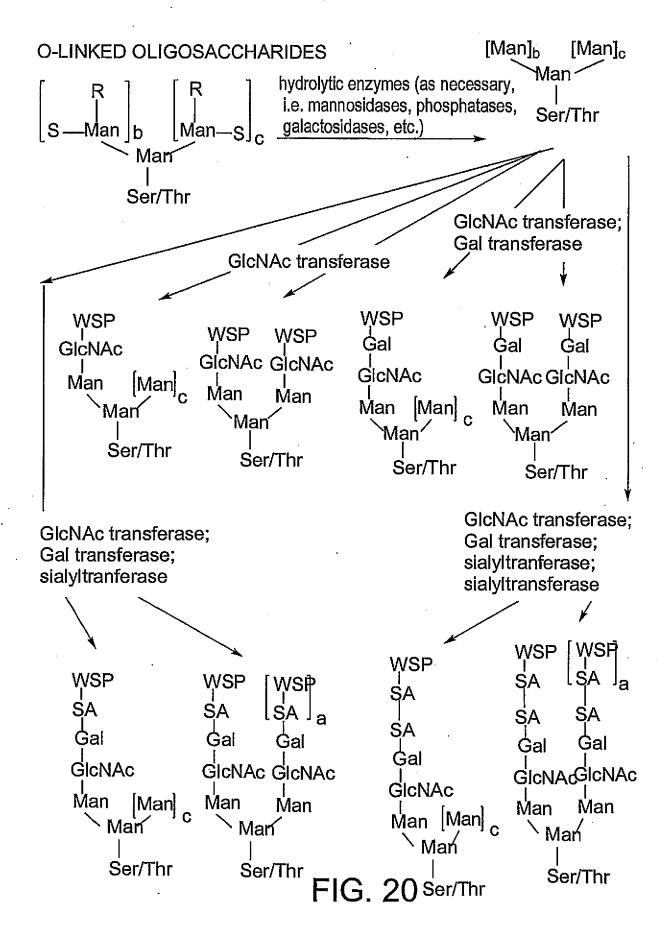
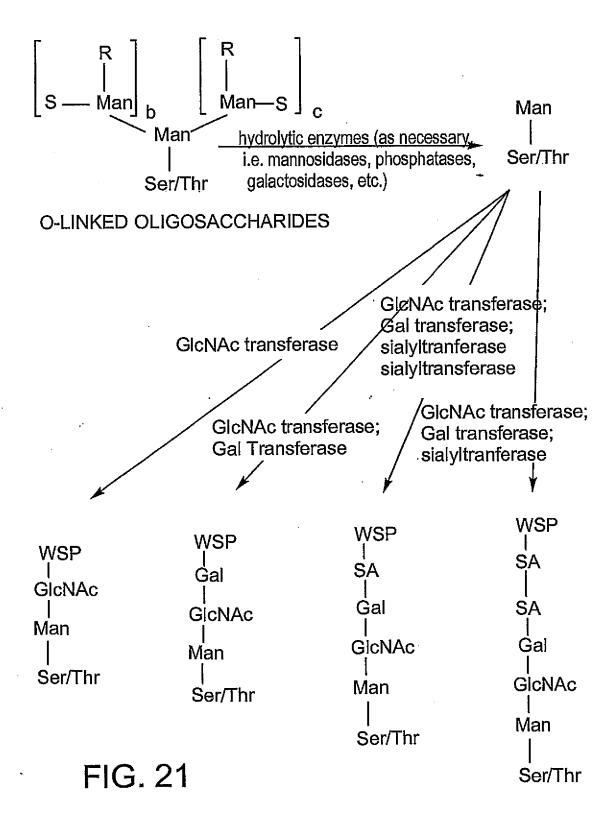


FIG. 19





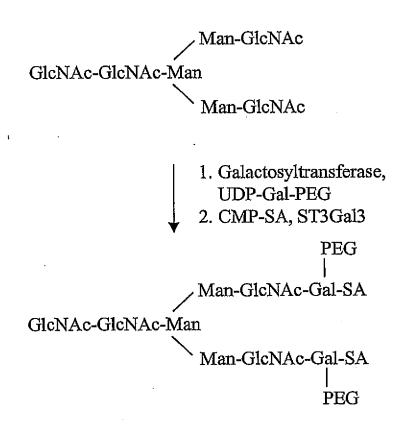


FIG. 22A

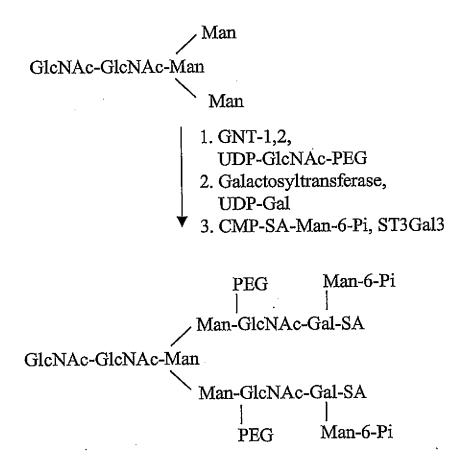
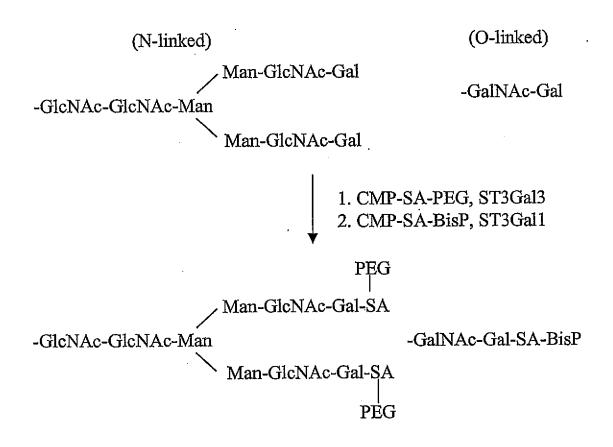


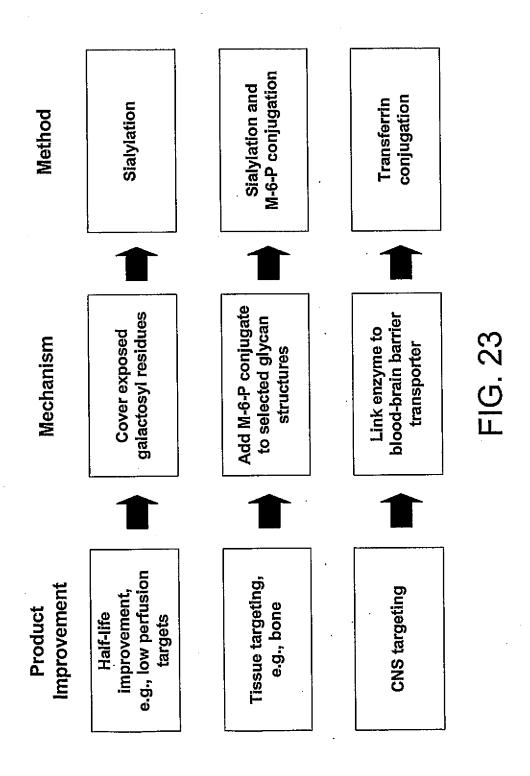
FIG. 22B



BisP =Linker-HN-CH(PO₃)₂

FIG. 22C

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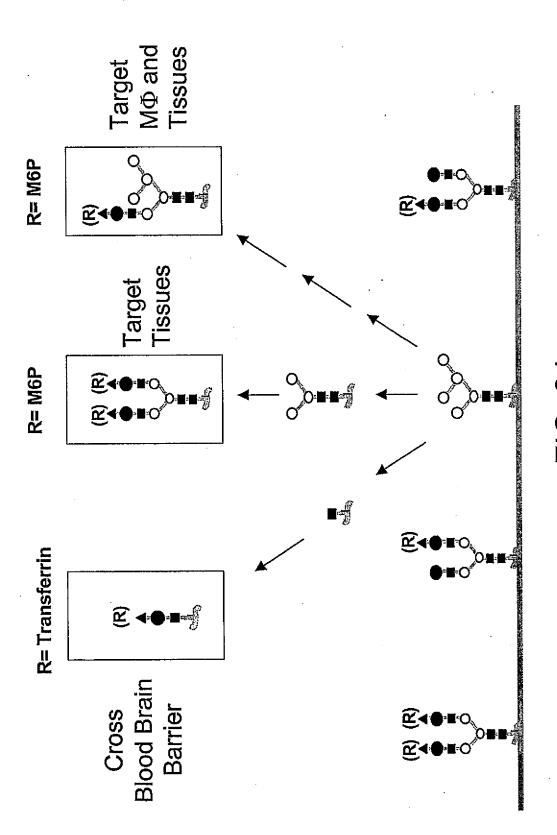
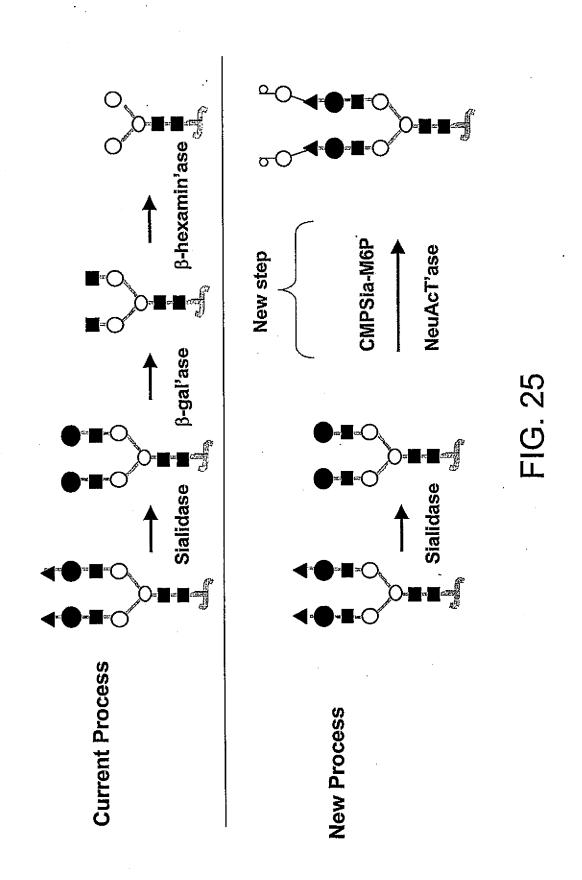


FIG. 24

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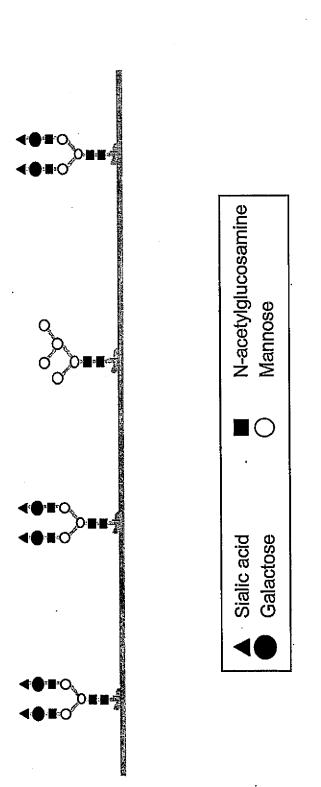
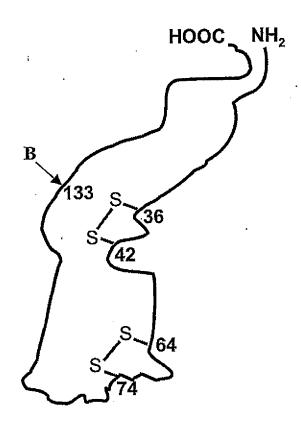


FIG. 26



$$\mathbf{B} \leftarrow \begin{pmatrix} (\mathrm{Sia})_{b} \\ -\mathrm{GalNAc-(Gal)}_{a} - (\mathrm{Sia})_{c} - (\mathrm{R})_{d} \end{pmatrix}_{e}$$

a-c, e (independently selected) = 0 or 1;
d = 0;
R = modifying group, mannose, oligomannose

CHO, BHK, 293 cells, Vero expressed G-CSF a-c, e (independently selected) = 0 or 1; d = 0

- 1. Sialidase
- 2. CMP-SA-PEG, ST3Gal1

a-d, e (independently selected) = 0 or 1; R = PEG.

FIG. 27B

Insect cell expressed G-CSF a, e (independently selected) = 0 or 1; b, c, d = 0.

- 1. Galactosyltransferase, UDP-Gal
- 2. CMP-SA-PEG, ST3Gal1

a, c, d, e (independently selected) = 0 or 1; R = PEG.

FIG. 27C

E. coli expressed G-CSF a-e=0.

- 1. GalNAc Transferase, UDP-GalNAc
- 2. CMP-SA-PEG, sialyltransferase

c, d, e (independently selected) = 0 or 1; a, b = 0; R = PEG.

FIG. 27D

NSO expressed G-CSF a, e (independently selected) = 0 or 1; b, c, d = 0

- 1. CMP-SA-levulinate, ST3Gal1
- $2. H_4 N_2$ -PEG

a, c, d, e (independently selected) = 0 or 1; b = 0; R = PEG.

FIG. 27E

E. coli expressed G-CSF a-e=0.

1. Endo-GalNAc-osaminidase (synthetic enzyme), PEG-Gal-GalNAc-F

a, d, e = 1; b, c = 0; R = PEG.

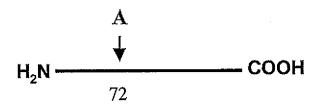
FIG. 27F

E. coli expressed G-CSF a-e = 0.

1. GalNAc Transferase, UDP-GalNAc-PEG

d, e = 0 or 1; a,-c = 0; R = PEG.

FIG. 27G



$$\mathbf{A} \leftarrow \begin{bmatrix} [\mathrm{GlcNAc\text{-}}(\mathrm{Gal})_{a}]_{e}\text{-}(\mathrm{Sia})_{j}\text{-}(\mathrm{R})_{v} \end{bmatrix}_{r} \\ [\mathrm{GlcNAc\text{-}}(\mathrm{Gal})_{b}]_{f}\text{-}(\mathrm{Sia})_{k}\text{-}(\mathrm{R})_{w} \end{bmatrix}_{s} \\ [\mathrm{GlcNAc\text{-}}(\mathrm{Gal})_{b}]_{g}\text{-}(\mathrm{Sia})_{l}\text{-}(\mathrm{R})_{x} \end{bmatrix}_{t} \\ [\mathrm{GlcNAc\text{-}}(\mathrm{Gal})_{d}]_{h}\text{-}(\mathrm{Sia})_{m}\text{-}(\mathrm{R})_{y} \end{bmatrix}_{u}$$

$$\mathbf{B} \leftarrow \begin{pmatrix} (\operatorname{GlcNAc-Gal})_{cc} - (\operatorname{Sia})_{o} - (R)_{ee} \\ - \operatorname{GalNAc-(Gal})_{n} - (\operatorname{Sia})_{p} - (R)_{z} \end{pmatrix}_{q}$$

a-d, i, n-u (independently selected) = 0 or 1.
aa, bb, cc, dd, ee (independently selected) = 0 or 1.
e-h (independently selected) = 0 to 6.
j-m (independently selected) = 0 to 20.
v-z = 0; R = modifying group, mannose, oligo-mannose.
R' = H, glycosyl residue, modifying group,
glycoconjugate.

FIG. 28A

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```
CHO, BHK, 293 cells, Vero expressed interferon alpha 14C.
a-d, aa, bb = 1; e-h = 1 to 4;
cc, j-m, i, r-u (independently selected) = 0 or 1;
q, n-p, v-z, cc, dd, ee = 0.
```

- 1. Sialidase
- 2. CMP-SA-PEG, ST3Gal3

```
a-d, aa, bb = 1; e-h = 1 to 4;
bb, cc, i, r-u (independently selected) = 0 or 1;
q, n-p, v-z, cc, dd, ee = 0;
v-y (independently selected) = 1,
when j-m (independently selected) = 1;
R = PEG.
```

FIG. 28B

```
Insect cell or fungi expressed interferon alpha-14C. a-d, f, h, j-q, s, u, v-z, cc, dd, ee = 0; e, g, i, r, t (independently selected) = 0 or 1; aa, bb = 1.
```

- 1. GNT's 1&2, UDP-GlcNAc
- 2. Galactosyltransferase, UDP-Gal-PEG

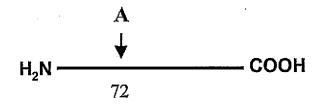
```
b, d, f, h, j-q, s, u, w, y, z, cc, dd, ee = 0;
a, c, e, g, i, r, t, v, x (independently selected) = 0 or 1;
v, x (independently selected) = 1,
when a, c, (independently selected) = 1;
aa, bb = 1; R = PEG.
```

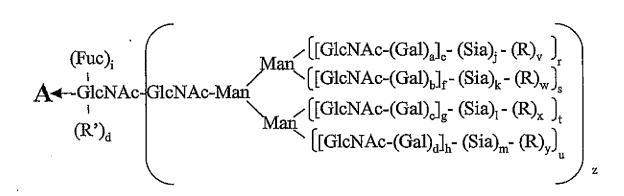
Yeast expressed interferon alpha-14C. a-q, cc, dd, ee, v-z = 0; r-y (independently selected) = 0 to 1; aa, bb = 1;R (branched or linear) = Man, oligomannose or polysaccharide.

- 1. Endo-H
- Galactosyltransferase, UDP-Gal
 CMP-SA-PEG, ST3Gal3

a-z, bb = 0; aa = 1; R' = -Gal-Sia-PEG.

FIG. 28D





a-d, i, r-u (independently selected) = 0 or 1. e-h (independently selected) = 0 to 4. j-m (independently selected) = 0 or 1. n, v-y = 0; z = 0 or 1. R = polymer; R' = sugar, glycoconjugate.

FIG. 28E

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```
CHO, BHK, 293 cells, Vero expressed interferon alpha-14C.

h = 1 to 3;

a-g, j-m, i (independently selected) = 0 or 1;

r-u (independently selected) = 0 or 1;

n, v-y = 0; z = 1.
```

1. CMP-SA-PEG, ST3Gal3

```
h = 1 to 3;
a-g, i (independently selected) = 0 or 1;
r-u (independently selected) = 0 or 1;
j-m, v-y (independently selected) = 0 or 1;
z = 1; n = 0; R = PEG.
```

FIG. 28F

```
Insect cell or fungi expressed
interferon alpha-14C.
a-d, f, h, j-n, s, u, v-y = 0;
e, g, i, r, t (independently selected) = 0 or 1;
z = 1.
```

- 1. GNT's 1,2,4,5, UDP-GlcNAc
- 2. Galactosyltransferase, UDP-Gal
- 3. CMP-SA-PEG, ST3Gal3

a-m, r-y (independently selected) = 0 or 1; z = 1; n = 0; R = PEG.

FIG. 28G

Yeast expressed interferon alpha-14C. a-n = 0; r-y (independently selected) = 0 to 1; z = 1; R (branched or linear) = Man, oligomannose.

- 1. mannosidases
- 2. GNT's 1,2,4,5, UDP-GlcNAc
- 3. Galactosyltransferase, UDP-Gal
- 4.. CMP-SA-PEG, ST3Gal3

a-m, r-y (independently selected) = 0 or 1; z = 1; n = 0; R = PEG.

FIG. 28H

NSO expressed interferon alpha 14C. a-i, r-u (independently selected) = 0 or 1; j-m, n, v-y = 0; z = 1.

- 1. CMP-SA-levulinate, ST3Gal3, buffer, salt
- $2. H_4N_2$ -PEG

a-i, j-m, r-y (independently selected) = 0 or 1; n = 0; z = 1; R = PEG.

FIG. 281

```
CHO, BHK, 293 cells, Vero expressed interferon alpha-14C.

h = 1 to 3;
a-g, j-m, i (independently selected) = 0 or 1;
r-u (independently selected) = 0 or 1;
n, v-y = 0; z = 1.
```

1. CMP-SA-PEG, α 2,8-ST

```
h = 1 to 3;
a-g, i, r-u (independently selected) = 0 or 1;
j-m (independently selected) = 0 to 2;
v-y (independently selected) = 1,
when j-m (independently selected) is 2;
z = 1; n = 0; R = PEG.
```

FIG. 28J

```
CHO, BHK, 293 cells, Vero expressed Interferon alpha-14C.
a-g, j-m, r-u (independently selected) = 0 or 1;
h = 1 to 3; n, v-y = 0; z = 1.
```

- 1. Sialidase
- 2. Trans-sialidase, PEG-Sia-lactose

a-g, j-m, r-y (independently selected) = 0 or 1; h = 1 to 3; n = 0; z = 1; R = PEG.

FIG. 28K

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```
CHO, BHK, 293 cells, Vero expressed interferon alpha-14C.

h = 1 to 3;
a-g, j-m, i (independently selected) = 0 or 1;
r-u (independently selected) = 0 or 1;
n, v-y = 0; z = 1.
```

1. CMP-SA, α 2,8-ST

```
h = 1 to 3;
a-g, i, r-u (independently selected) = 0 or 1;
j-m (independently selected) = 0 to 40;
z = 1; v-y, n = 0.
```

FIG. 28L

```
Insect cell or fungi expressed interferon alpha-14C.
a-d, f, h, j-n, s, u, v-y = 0;
e, g, i, r, t (independently selected) = 0 or 1;
z = 1.
```

- 1. GNT's 1 & 2, UDP-GlcNAc
- 2. Galactosyltransferase, UDP-Gal-linker-SA-CMP
- 3. ST3Gal3, transferrin

```
a, c, e, g, i, r, t, v, x (independently selected) = 0 or 1;

z = 1; b, d, f, h, j-n, s, u, w, y = 0;

R = \text{transferrin}.
```

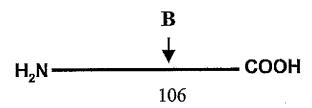
FIG. 28M

```
Insect cell or fungi expressed interferon alpha-14C.
a-d, f, h, j-n, s, u, v-y = 0;
e, g, i, r, t (independently selected) = 0 or 1; z = 1.
```

- 1. endoglycanase
- 2. Galactosyltransferase, UDP-Gal-linker-SA-CMP
- 3. ST3Gal3, transferrin

```
i (independently selected) = 0 or 1;
a-h, j-m, r-z = 0;
n = 1; R' = -Gal-linker-transferrin.
```

FIG. 28N



$$\mathbf{B} \leftarrow \begin{pmatrix} (\operatorname{GlcNAc-Gal})_{\mathbf{f}} - (\operatorname{Sia})_{\mathbf{b}} - (\mathbf{R})_{\mathbf{g}} \\ - \operatorname{GalNAc-(Gal)}_{\mathbf{a}} - (\operatorname{Sia})_{\mathbf{c}} - (\mathbf{R})_{\mathbf{d}} \end{pmatrix}_{\mathbf{e}}$$

a-c, e, f (independently selected) = 0 or 1; d, g = 0; R = polymer, glycoconjugate.

FIG. 280

CHO, BHK, 293 cells, Vero expressed IF-alpha (2a or 2b). a-c (independently selected) = 0 or 1; e = 1; d, f, g = 0

- 1. Sialidase
- 2. CMP-SA-PEG, ST3Gal1

a-d (independently selected) = 0 or 1; e = 1; b, f, g = 0; R = PEG.

FIG. 28P

Insect cell expressed interferon alpha (2a or 2b). a, e (independently selected) = 0 or 1; b, c, d, f, g = 0.

- 1. Galactosyltransferase, UDP-Gal
- 2. CMP-SA-PEG, ST3Gal1

a, c, d, e (independently selected) = 0 or 1; b, f, g = 0; R = PEG.

FIG. 28Q

E. coli expressed IF-alpha (2a or 2b). a-g=0.

1. GalNAc Transferase, UDP-GalNAc-PEG

a-c, f, g = 0; d, e = 1; R = PEG.

FIG. 28R

NSO expressed IF-alpha (2a or 2b). a (independently selected) = 0 or 1; e = 1; b, c, d, f, g = 0

- 1. CMP-SA-levulinate, ST3Gal1
- $2. H_4N_2$ -PEG

a, c, d (independently selected) = 0 or 1; e = 1; b, f, g = 0; R = PEG.

FIG. 28S

E. coli expressed IF-alpha (2a or 2b). a-g=0.

1. Endo-N-acetylgalatosamidase (synthetic enzyme), PEG-Gal-GalNAc-F

a, d, e = 1; b, c, f, g = 0; R = PEG.

FIG. 28T

E. coli expressed IF-alpha (2a or 2b). a-g=0.

- 1. GalNAc Transferase, UDP-GalNAc
- 2. sialyltransferase, CMP-SA-PEG

b, d = 0 or 1; e = 1; a, c, f, g = 0; R = PEG.

FIG. 28U

CHO, BHK, 293 cells, Vero expressed IF-alpha (2a or 2b). a-c, f (independently selected) = 0 or 1; e = 1; d, g = 0

- 1. Sialidase
- 2. CMP-SA-PEG, ST3Gal1 and ST3Gal3

a-d, f, g (independently selected) = 0 or 1; e = 1; R = PEG.

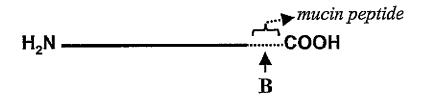
FIG. 28V

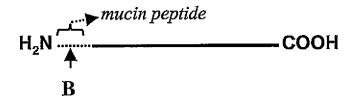
CHO, BHK, 293 cells, Vero expressed IF-alpha (2a or 2b). a-c, f (independently selected) = 0 or 1; e = 1; d, g = 0

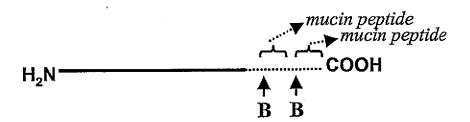
- 1. Sialidase
- 2. CMP-SA-linker-SA-CMP, ,ST3Gal1
- 3. ST3Gal3, transferrin

a-d, f (independently selected) = 0 or 1; e = 1; R = transferrin; g = 0.

FIG. 28W







$$\mathbf{B} \quad \blacktriangleleft \begin{bmatrix} (\mathrm{Sia})_{b} \\ -\mathrm{GalNAc-(Gal)_{a}-(Sia)_{c}-(R)_{d}} \end{bmatrix}_{e}$$

a-c, e (independently selected) = 0 or 1; d = 0; R = polymer, glycoconjugate.

FIG. 28X

CHO, BHK, 293 cells, Vero expressed interferon alpha-mucin fusion protein. a-c, e (independently selected) = 0 or 1; d = 0

- Sialidase
 - 2. CMP-SA-PEG, ST3Gal1

a-d, e (independently selected) = 0 or 1; R = PEG.

FIG. 28Y

Insect cell expressed interferon alpha-mucin fusion protein.

a, e (independently selected) = 0 or 1; b, c, d = 0.

1. Galactosyltransferase, UDP-Gal-PEG

a, d, e (independently selected) = 0 or 1; b, c = 0; R = PEG.

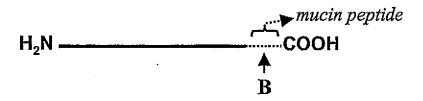
E. coli expressed interferon alpha-mucin fusion protein.

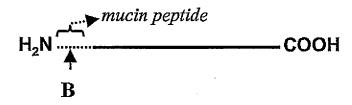
$$a-e=0$$
.

- 1. GalNAc Transferase, UDP-GalNAc
- 2. CMP-SA-PEG, sialyltransferase

c, d, e (independently selected) = 0 or 1; a, b = 0; R = PEG.

FIG. 28AA





$$\mathbf{B} \leftarrow \begin{bmatrix} (\operatorname{Sia})_{b} \\ -\operatorname{GalNAc-(Gal)}_{a} - (\operatorname{Sia})_{c} - (R)_{d} \end{bmatrix}_{e}$$

a-c, e (independently selected) = 0 or 1; d = 0; R = polymer, linker.

FIG. 28BB

E. coli expressed interferon alpha-mucin fusion protein.

a-e, n=0.

1. GalNAc Transferase, UDP-GalNAc-PEG

d, e (independently selected) = 0 or 1; a-c, n = 0; R = PEG.

FIG. 28CC

E. coli expressed interferon alpha-mucin fusion protein.

a-e, n = 0.

- 1. GalNAc Transferase, UDP-GalNAc-linker-SA-CMP
- 2. ST3Gal3, asialo-transferrin
- 3. CMP-SA, ST3Gal3

d, e (independently selected) = 0 or 1; a-c, n = 0; R = linker-transferrin.

FIG. 28DD

E. coli expressed Interferon alpha (no fusion). a-e, n = 0.

- 1. NHS-CO-linker-SA-CMP
- 2. ST3Gal3, transferrin

a-e=0; n=1; R'=linker-transferrin.

FIG. 28EE